MSI RG54G2 (MS-6848)
Wireless 11g Broadband Router

User's Guide

FCC Caution

1. The device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
   (1) This device may not cause harmful interference, and
   (2) This device must accept any interference received, including interference that may cause undesired operation.
2. FCC RF Radiation Exposure Statement: The equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.
3. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
4. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

Copyright Notice

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Revision History

Revision	History	Date
V 1.0	First Release	May 2004

Important Safety Precautions

Always read and follow these basic safety precautions carefully when handling any piece of electronic component.

1. Keep this *User's Guide* for future reference.
2. Keep this equipment away from humidity.
3. Lay this equipment on a reliable flat surface before setting it up.
4. The openings on the enclosure are for air convection hence protects the equipment from overheating.
5. All cautions and warnings on the equipment should be noted.
6. Never pour any liquid into the opening that could damage or cause electrical shock.
7. If any of the following situations arises, get the equipment checked by a service personnel:
   - Liquid has penetrated into the equipment
   - The equipment has been exposed to moisture
   - The equipment has not work well or you can not get it work according to User's Manual
   - The equipment has dropped and damaged
   - If the equipment has obvious sign of breakage
8. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^{O} C OR BELOW -20^{O}C, IT MAY DAMAGE THE EQUIPMENT.

How to Use This Guide

This User's Guide provides instructions and illustrations on how to install and use your **MSI RG54G2** - the Wireless 11g Broadband Router.

- Chapter 1, **Introduction**, provides general information on the Router.
- Chapter 2, **Knowing Your Router**, introduces physical features of the Router.
- Chapter 3, **Connecting Your Router**, tells you how to install the Router into your system.
- Chapter 4, **Configuring Your PC**, instructs how to configure each of your computers to communicate with this Router.
- Chapter 5, **Configuring Your Router - Basic**, explains how to use the Web Configuration Utility to manage basic settings of this Router.
- Chapter 6, **Configuring Your Router - Advanced**, details how to intelligently manage advanced features of this Router.

Please note that the setting diagrams or values in this guide are **FOR YOUR REFERENCE ONLY**. The actual settings and values depend on your system and network. If you are not sure about these information, please ask your network administrator or MIS staff for help.

Technical Support

- Visit the MSI website for FAQ, technical guide, driver and software updates, and other information: ***http://www.msi.com.tw/***.
- Contact our technical staff at: ***support@msi.com.tw***.

Table of Contents

1. Introduction 1
1.1 MSI RG54G2 - Wireless 11g Broadband Router 1
1.2 Networking Options 3
1.3 Features and Benefits 5
1.4 Package Contents 6
1.5 System Requirements 6
1.6 Specifications 7

2. Knowing Your Router 11
2.1 Product View 11
2.2 Connections Ports 12
2.3 LEDs 13

3. Connecting Your Router 14

4. Configuring Your PC 16
4.1 Configuring Windows 98SE/ME 16
4.2 Configuring Windows 2000/XP 18

5. Configuring Your Router - Basic 20
5.1 Web Configuration Utility 20
5.2 Typical Configuration 22

6. Configuring Your Router - Advanced 28
6.1 System Settings 29
6.2 Internet Settings 37
6.3 LAN Settings 41
6.4 Wireless Settings 46
6.5 NAT Settings 59
6.6 Firewall Settings 63

1 Introduction

>>> 1.1 MSI RG54G2 - Wireless 11g Broadband Router

Thank you for purchasing MSI Wireless 11g Broadband Router - **RG54G2**. MSI Wireless 11g Broadband Router RG54G2, based on the cutting-edge IEEE 802.11g wireless technology, is a high quality and reliable Internet routing and security device, capable of wirelessly transferring bandwidth-consuming applications with enhanced security and privacy. With inherently **Nitro™** technology enhancement, MSI RG54G2 performance is significantly increased in 802.11b and 802.11g mixed networks.

A multi-functional and versatile device, MSI RG54G2 provides the most flexibility to your network set-up. Simply install the RG54G2 Router, connect to Cable/DSL modem, and surf Internet without extra efforts. Also, it supports **WDS** (Wireless Distribution System) that could repeat wireless signal and easily extend your network coverage. Acting as a 10/100Mbps 4-port Ethernet switch as well, MSI RG54G2, with all ports supporting **MDI/MDI-X**, allows you to use CAT5 cable to uplink to other routers/switches.

The MSI RG54G2 is featured with most advanced security technology, supporting **WPA** (Wi-Fi Protected Access), **TKIP**, **AES**, and **802.1x**. With MSI RG54G2, your network is armed with the highest levels of protection.

Built with all-in-one functionality, MSI RG54G2 Broadband Router combines a wireless access point, a wireless bridge, an Internet-sharing router, and a 4-port wired switch into a single device. It provides you the ultimate in networking flexibility.

- **Wireless Access Point**
  MSI RG54G2 acts as a communication hub for users of wireless 11b/g devices connected to a wired infrastructure, and relays data between devices on each side. It also connects all wireless devices together to create a wireless local area network, enabling wireless data transmission with one another.

- **Wireless Bridge**
  Supporting WDS (Wireless Distribution System), MSI RG54G2 can talk directly to other access points or routers. Acting as a WLAN-to-WLAN bridge, it efficiently extends wired infrastructure to locations where cabling is difficult or inefficient to implement.

- **Internet-Sharing Router**
  MSI RG54G2 functions as a gateway to route inbound and outbound data between local area network and the Internet, and enables all home network computers sharing the access. Incorporating firewall and NAT, MSI RG54G2 builds up an Internet connection with network protection.

- **4-Port Ethernet Switch**
  Featured four LAN ports with MDI/MDI-X support, MSI RG54G2 allows physical link of up to four Ethernet devices, such as PCs or hubs.

>>> 1.2 Networking Options

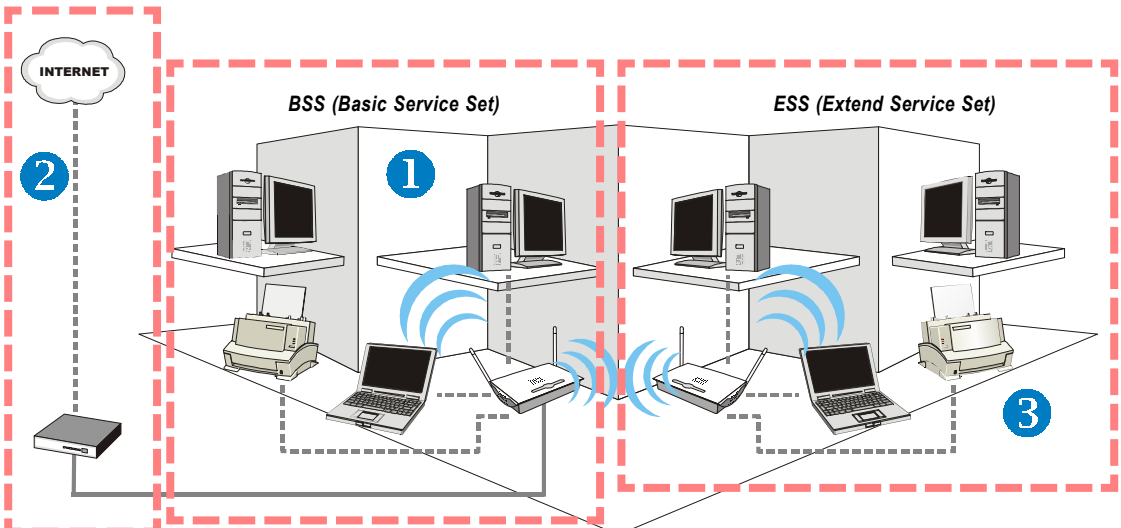
MSI RG54G2 Broadband Router serves as a central station of your network. It not only bridges communication between computers, access points, and routers, but also connects them to the Internet.

You can take most out of the RG54G2 router in the following applications (see the figure in the following page):

- **Home device connectivity: (1)**
  MSI RG54G2 performs as a central point of your local area network, connecting your wireless and wired devices together to form a Basic Service Set (BSS). As shown in the middle part of the below diagram, the out-of-the-box operation mode of the RG54G2 allows your client stations to share files or printers as well as to play multiplayer games. Adding a wireless computer is as easy as inserting a wireless client adapter and configuring the computer with the same Network Name and Key.

- **Broadband access sharing: (2)**
  As shown in the diagram, MSI RG54G2 acts as a gateway to your network, controlling and routing information to its required destination on the Internet while protecting your network from the public access.

- **Network coverage extension: (3)**
  With WDS support, MSI RG54G2 router functions as a wireless bridge, directly connecting between multiple WLAN through wireless communications instead of wired connectivity. It helps extend network range to form a Extend Service Set (ESS) without tangling wires and cables.



Application of RG54G2 in Your Wireless Network

>>> 1.3 Features and Benefits

- **PRISM Nitro™ support:** enhance performance for 50% greater throughput in 11g only network and 300% in mixed network co-existing 11g and 11b devices
- **Enhanced security:** authenticate and encrypt with advanced WPA, 802.1x, AES, TKIP and 64/128-bit WEP
- **WDS support:** extend wireless network coverage by functioning as a bridge
- **Auto MDI/MDI-X support:** simplify wired network setup by using either standard or crossover CAT-5 cables
- **Instant-off security button**: easy to disable RF access by pushing a button.
- **Antenna diversity support:** automatically switch association between two antennae as to receive the best signal quality
- **Firewall protection**: NAT default and SPI option, Access Control List, IP and MAC address filtering
- **Built-in DHCP server**: assign IP addresses to each computer automatically so there is no need for a complicated networking setup.
- **UPnP compatibility**: offers seamless operation of voice messaging, video messaging, games, and other applications that are UPnP-compliant.

>>> 1.4 Package Contents

Unpack the package and check all the items carefully. If any item contained is damaged or missing, please contact your local dealer immediately. Also, keep the box and packing materials in case you need to ship the unit in the future. The package should contain the following items:

- One Wireless 11g Broadband Router - **RG54G2**

- One AC Power Adapter, 12VDC/1A output

- One Ethernet cable (RJ-45)

- One Quick Start Guide

- One CD-ROM including manual files

>>> 1.5 System Requirements

After installing the RG54G2, you need the followings to configure respective network settings:

- Laptop or desktop PC with a wireless 11b or 11g client card installed.

- Microsoft® Windows® 98SE/ME/2000/XP.

- 200MHz or faster processor recommended.

- Internet browser for web-based configuration.

>>> 1.6 Specifications

Hardware		
General	**Wireless Data Rates**	- IEEE802.11b (auto-fallback) CCK: 11, 5.5Mbps DQPSK: 2Mbps DBPSK: 1Mbps - IEEE802.11g (auto-fallback) OFDM: 54, 48, 36, 24, 18, 12, 9, and 6Mbps
	Standard Compliance	- IEEE802.11g - IEEE802.11b - IEEE802.3/802.3u - IEEE802.3x
	Dimension	180 x 127.2 x 32 mm
	Antenna Requirement	- Peak Gain = 2dBi - Average Gain = 1.08dBi (@ 2.45GHz, H-Plan)
	Antenna Specification	Dual dipole external antennae
	LEDs	- Power LED x 1 - WAN LED x 1 - LAN LED x 4 - WLAN LED x 1
	SDRAM Memory	8MB
	Flash Memory	2MB
	Power Consumption	- Max loading ≤ 7W - Standby Mode ≤ 650mA - Transmit Mode ≤ 810mA (RF Continuous Mode)

AGC (Auto Gain Control)	Yes
Antenna Diversity	Yes
Channel Frequency	- 2.4 ~ 2.4835GHz - 14 channels
Output Power	- 11b Mode: 17 ± 1dBm (before antenna) - 11g Mode: 13.5 ± 1dBm (before antenna)
Receive Minimum Input Level Sensitivity	- 54Mbps OFDM @ 10% PER = -67dBm - 48Mbps OFDM @ 10% PER = -70dBm - 36Mbps OFDM @ 10% PER = -75dBm - 24Mbps OFDM @ 10% PER = -79dBm - 18Mbps OFDM @ 10% PER = -82dBm - 12Mbps OFDM @ 10% PER = -84dBm - 11Mbps CCK @ 8% PER = -82dBm - 9Mbps OFDM @ 10% PER = -87dBm - 6Mbps OFDM @ 10% PER = -85dBm - 5.5Mbps CCK @ 8% PER = -85dBm - 2Mbps QPSK @ 8% PER = -86dBm - 1Mbps BPSK @ 8% PER = -89dBm
Throughput	- 54Mbps OFDM Throughput > 21Mbps - 48Mbps OFDM Throughput > 20Mbps - 36Mbps OFDM Throughput > 17Mbps - 24Mbps OFDM Throughput > 10Mbps - 18Mbps OFDM Throughput > 9Mbps - 12Mbps OFDM Throughput > 5.5Mbps - 11Mbps CCK Throughput > 5Mbps - 9Mbps OFDM Throughput > 3.5Mbps - 6Mbps OFDM Throughput > 3Mbps - 5.5Mbps CCK Throughput > 2Mbps - 2Mbps QPSK Throughput > 0.8Mbps - 1Mbps BPSK Throughput > 0.4Mbps

LAN	**Numbers of PCs Supported**	Up to 253
	Numbers of Ports	Four RJ-45 10/100 switched Ethernet ports
	Auto Crossover Detection	Yes
WAN	**Numbers of Ports**	One RJ-45 port for a Cable/xDSL modem
	Management Tools	Web-based browser; Event log; Login password
	Auto Crossover Detection	Yes

Software	
LAN	- DHCP Server - Static IP - MAC Filter - uPnP
WAN	- Static IP - DHCP Client - PPPoE - PPTP - Clone MAC
Wireless	- Radio & Channel setting - Data Rate - 64/128 bits WEP - 802.1x - WPA - Wireless Bridge - Association Control & List

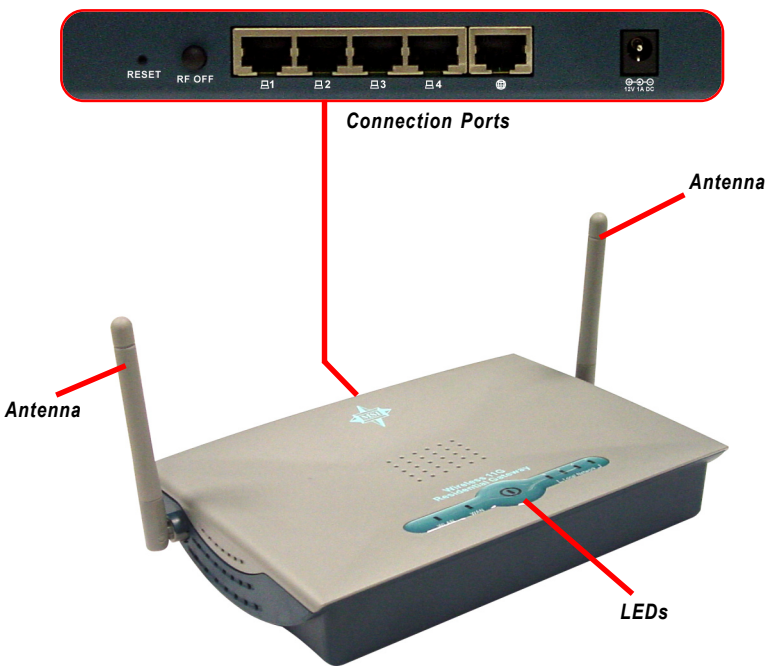
Gateway	- NAPT (one to many) - NAT - Firewall: Virtual DMZ, IP Filter, ICMP Blocking, DoS, SPI, VPN pass-through - DNS Relay - DDNS - Remote Management - Password Management - Time Zone Management & NTP Client - Firmware upgradeable - Status and Statistics - Event Log - Email Alarm - Reset Factory Default

Environment	
Operational Temp.	0 ~ 45°C @ 90% Humidity (non-condensing)
Storage Temp.	-40 ~ 75°C @ 95% Humidity (non-condensing)

2 Knowing Your Router

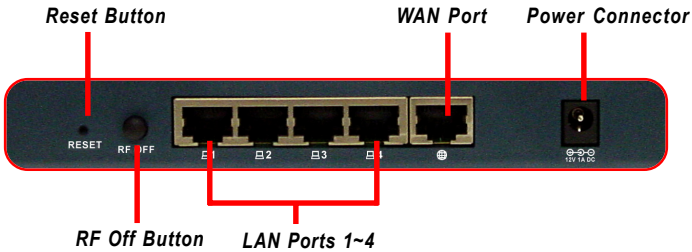
This chapter provides a quick introduction on the physical features of your RG54G2.

>>> 2.1 Product View



RG54G2

>>> 2.2 Connection Ports



** Use a pointed object (e.g. a stretched clip)*

Reset Button

1. Press and hold* this button longer than 1 second to restart the router.
2. Press and hold* this button longer than 5 seconds to reload factory default settings of the router.

RF Off Button

1. Push down this button to turn off RF functionality.
2. Push up this button to turn on RF functionality. (Default)

LAN Ports 1~4

Those ports are used to connect your computers and other network devices with auto-sensing.

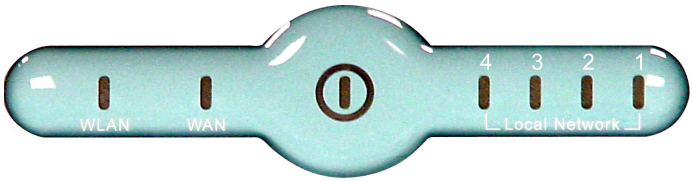
WAN Port

This port is used to connect your xDSL/Cable Modem for Internet connection.

Power Connector

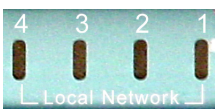
This connector is used to connect the enclosed AC power adapter.

>>> 2.3 LEDs



Power

1. **Off** - no power.
2. Steady **Blue** - the router is powered up.



LAN 1~4

1. **Off** - no LAN connection.
2. Steady **Green** - a computer/device is successfully connected to the port.
3. Blinking **Green** - data is transmitted or received over the port.

WAN

1. **Off** - no WAN connection.
2. Steady **Green** - a device is successfully connected to the port.
3. Blinking **Green** - data is transmitted or received over the port.

Wireless Status

1. **Off** - no wireless connection.
2. Steady **Green** - a wireless connection is ready.
3. Blinking **Green** - data is transmitted or received over wireless network.

3 Connecting Your Router

Selecting a Location

Before connecting the RG54G2 to your devices, please note the RG54G2 should be placed in a location where is:

- A flat surface, and do not put any heavy object on it.
- Easy to access; therefore, you can easily connect Cable/DSL modem to its WAN port and connect computers or other devices to its LAN ports.
- Easily to read LEDs clearly, so that you may monitor real-time networking status and take instant measures as problems arise.

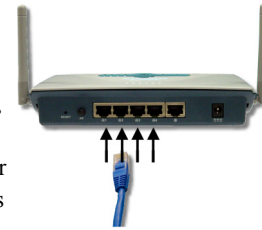
Tip: *The location of RG54G2 should be the optimum position to obtain best signal quality; sometimes, you may adjust the direction of antennae.*

Connecting the Router

1. Ensure both of your RG54G2 and Cable/DSL modem are powered off before connecting.

2. Connect one end of an Ethernet cable to the WAN port of RG54G2, and the other end to your Cable/DSL modem.

3. To build up wired Internet connection, plug one end of another Ethernet cable to the LAN port (1~4) of RG54G2, and the other end to your computers. It does not matter which numbered LAN port is chosen.



4. Power on your Cable/DSL modem by turning on power switch or re-connecting its power adapter.

5. Power up the RG54G2 by plugging the DC end of power adapter into the power receptor of RG54G2 and the AC end to an electrical outlet.

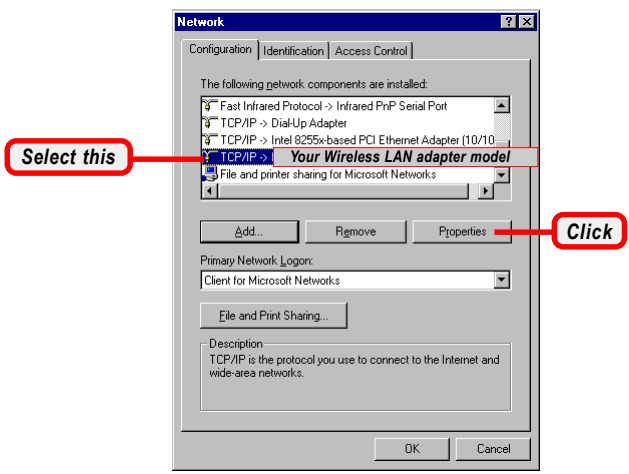
6. Verify LEDs on the top panel light up to indicate proper connection:
   - Power LED should be **ON** to show power connection
   - WAN LED should be **ON** if your modem is correctly connected to the router.
   - LAN 1~4 LED should be **ON** correspondent to the numbered ports your computers are connecting to.

4 Configuring Your PC

This chapter details how to configure your Windows clients for Internet connection through MSI RG54G2 Router.

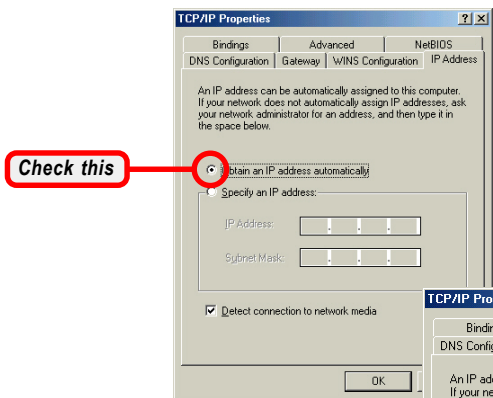
>>> 4.1 Configuring Windows 98SE/ME

1. Go to **Start -> Settings -> Control Panel**.
2. Double-click the **Network** icon.
3. The Network window appears as below. Select **TCP/IP ->** (your Wireless LAN adapter model), and click ***Properties*** to bring up the **TCP/IP Properties** window.

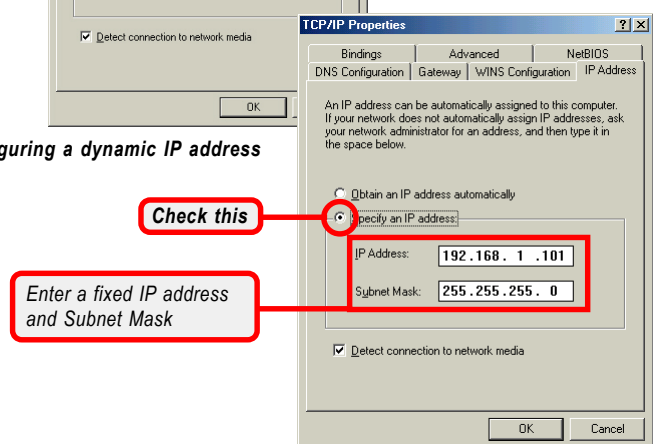


4.a To configure a dynamic IP address, choose **IP Address** tab and check the **Obtain an IP Address Automatically** option.

4.b To configure a fixed IP address, choose **IP Address** tab and check the **Specify an IP Address** option. Then, enter an IP address into the empty field. Suggested IP Address Range is ***192.168.1.1*** to ***192.168.1.253***, and suggested Subnet Mask is ***255.255.255.0***.


TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Check this
Obtain an IP address automatically
Specify an IP address:
IP Address:
Subnet Mask:
Detect connection to network media
OK

4.a Configuring a dynamic IP address


TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Check this
Specify an IP address:
IP Address:
192.168. 1 .101
Subnet Mask:
255.255.255. 0
Enter a fixed IP address and Subnet Mask
Detect connection to network media
OK
Cancel

4.b Configuring a fixed IP address

5. Click ***OK***. Then, click ***Yes*** when prompted to reboot the computer.

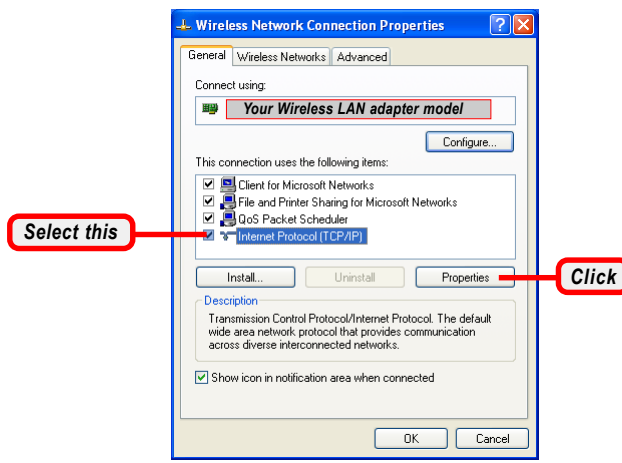
>>> 4.2 Configuring Windows 2000/XP

1. Go to **Start -> Settings -> Control Panel**.

2. Double-click the **Network Connection** icon to open the **Network Connection** window.

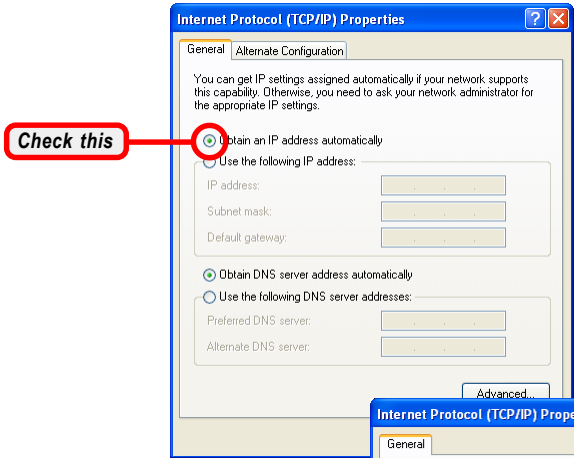
3. Right-click the **IEEE802.11g Wireless PCI Adapter** icon and click ***Properties*** from the shortcut menu.

4. When the **Wireless Network Connection Properties** window appears, choose **General** tab and select **Internet Protocol [TCP/IP]**, and click ***Properties*** to bring up the **Internet Protocol [TCP/IP] Properties** window.

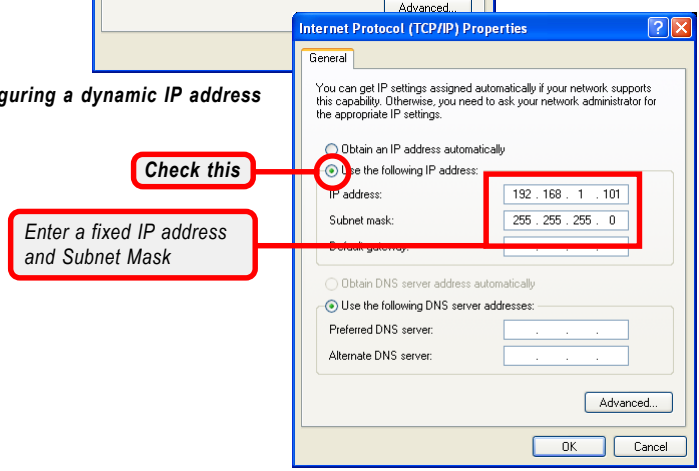


5.a To configure a dynamic IP address, check the **Obtain an IP Address Automatically** option.

5.b To configure a fixed IP address, check the **Use the following IP address** option. Then, enter an IP address into the empty field. Suggested IP Address Range is ***192.168.1.1*** to ***192.168.1.253***, and suggested Subnet Mask is ***255.255.255.0***.


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Check this
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...

5.a Configuring a dynamic IP address


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Check this
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 . 101
Subnet mask:
255 . 255 . 255 . 0
Enter a fixed IP address and Subnet Mask
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

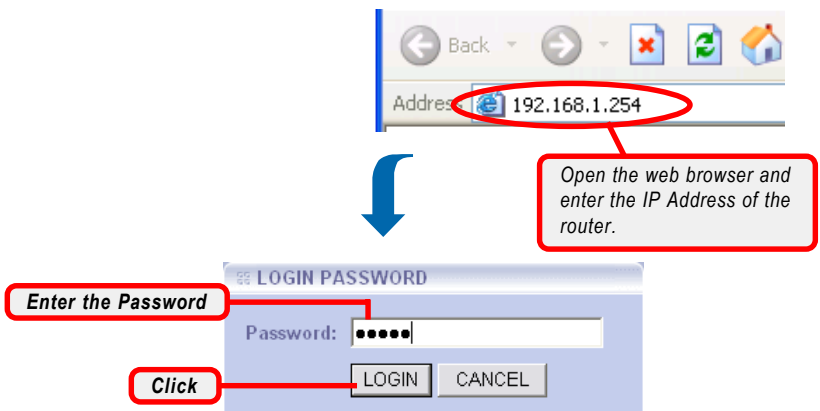
5.b Configuring a fixed IP address

6. Click ***OK*** to complete the configuration.

5 Configuring Your Router - Basic

>>> 5.1 Web Configuration Utility

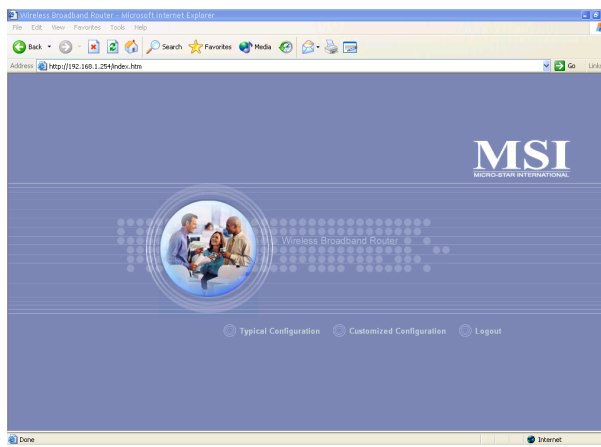
The MSI RG54G2 provides you with a convenient utility to customize the network settings. Whenever you want to configure the respective settings, open your web browser (e.g. Internet Explorer), and type the default IP address ***192.168.1.254*** in the Address bar and press [**Enter**]. When the password page appears, type ***admin**** in the Password box and click ***LOGIN***.



** **admin** is the default password setting of the router, and can be changed in the Configuration Utility. Refer to Section 6.1 for details.*

Note: *Since the RG54G2 supports DHCP Server and which is enabled by default, the computer connected to it is automatically assigned a dynamic IP address that is allowed to enter the Configuration Utility. Otherwise, you have to assign a fixed IP address to this computer within the IP address range of the RG54G2. For example, you can assign a fixed IP address of 192.168.1.253 with a Subnet Mask of 255. 255.255.0*

The Home window of the Configuration Utility will appear as below, which provides three options to select: **Typical Configuration**, **Customized Configuration**, and **Logout**.



Home Window of the Configuration Utility

- Typical Configuration: Provides a step-by-step Setup Wizard to guide you through the basic settings of the router. Generally, after completing the four steps in this option, your router can connect to the ISP.

- Customized Configuration: Allows you to customize the network settings of your router for some specific purposes, such as changing password, updating firmware, and configuring other network settings.

- Logout: Allows you to exit the utility and return to the login page.

>>> 5.2 Typical Configuration

For a basic network setup, click **Typical Configuration** in the Home page. The Setup Wizard will appear to guide you through Typical Configuration steps one by one. You can return to Home page by clicking **HOME** button that is available in every page of the Utility, or exit the Utility by clicking **Logout** whenever you want.

The Menu Bar

STEP 1 **Setting the Time Zone**

First, you should choose your Time Zone from the pull-down menu. For system management purpose, a correct time zone setting will let you have accurate time stamps on the system log. If you are in the area within the daylight saving period, please also check the **Daylight Saving** option.

The Menu Bar

MSI
MICRO-STAR INTERNATIONAL
Typical Configuration
HOME
Logout
Step 1
Step 2
Step 3
Step 4
Use the Typical Configuration pages to configure your wireless broadband router for Internet access. Follow the instructions on each page to connect your wireless broadband router to your ISP.
Step 1
Time Zone
Please setup your time zone. For system management purpose, a correctly configurated time zone setting will let you have accurate time stamps on the system log. If you're in the area that within the daylight saving period, please also check the option.
Time Zone
(GMT) Greenwich Mean Time: Lisbon, London
Daylight Saving
Enable
Disable
Back
Next
Help
Choose your Time Zone.

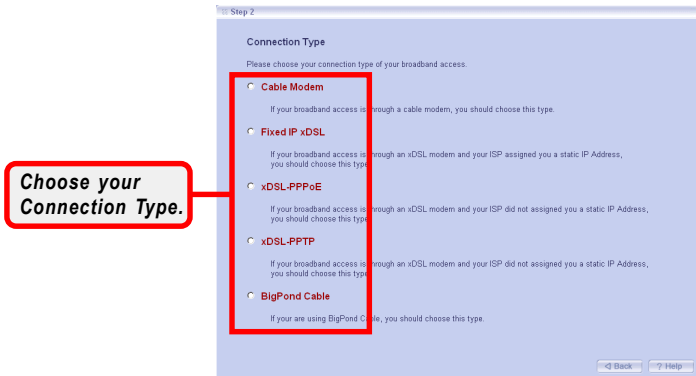
Step 1. Setting the Time Zone

On each screen, click "Help" button will bring up a help window.

Click ***Next*** to continue ***Step 2***.

STEP 2 **Setting the Connection Type**

According to the connection type your ISP provides, select an appropriate option.

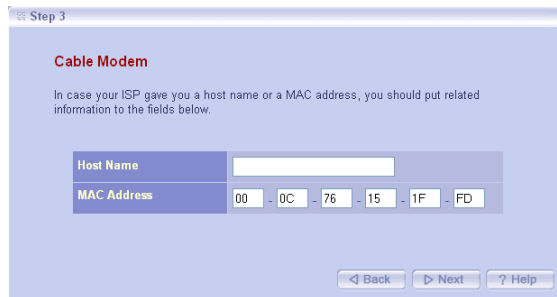

Choose your Connection Type.
Step 2
Connection Type
Please choose your connection type of your broadband access.
Cable Modem
If your broadband access is through a cable modem, you should choose this type.
Fixed IP xDSL
If your broadband access is through an xDSL modem and your ISP assigned you a static IP Address, you should choose this type.
xDSL-PPPoE
If your broadband access is through an xDSL modem and your ISP did not assigned you a static IP Address, you should choose this type.
xDSL-PPTP
If your broadband access is through an xDSL modem and your ISP did not assigned you a static IP Address, you should choose this type.
BigPond Cable
If your are using BigPond Cable, you should choose this type.
Back
Help

- **Cable Modem:** If your broadband access is through a cable modem, or if your ISP supports DHCP (Dynamic Host Configuration Protocol), select this type.
- **Fixed IP XDSL:** If your broadband access is through an xDSL modem and use a fixed IP address, select this type.
- **xDSL-PPPoE:** If your broadband access is through an xDSL modem and use PPPoE (Point-to-Point Protocol over Ethernet), select this type. The IP address is usually allocated automatically.
- **xDSL-PPTP:** If your broadband access is through an xDSL modem and use PPTP (Point-to-Point Tunneling Protocol), select this type. The service is used mostly in Europe.
- **BigPond Cable:** If your broadband access is through BigPond Cable, select this type. The service is used in Australia only.

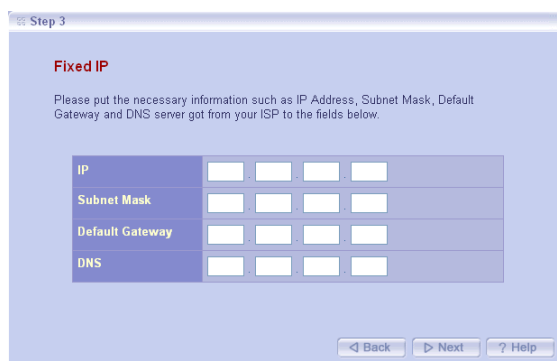
STEP 3 **Setting the Connection Type (continued)**

Based on the preceding selection, you will be further asked for different configuration settings.

- **Cable Modem:** If you are required by ISP to use a particular **Host Name** or **MAC Address**, enter the data into the fields accordingly. Mostly, leave them blank will work. Click ***Next*** to continue.


Step 3
Cable Modem
In case your ISP gave you a host name or a MAC address, you should put related information to the fields below.
Host Name
MAC Address
00 - 0C - 76 - 15 - 1F - FD
Back
Next
Help

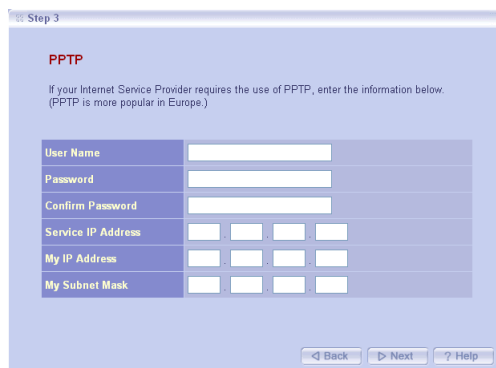
- **Fixed IP xDSL:** Fill in the data provided by your ISP in the fields of **IP**, **Subnet Mask**, **Default Gateway**, and **DNS** (Domain Name Server), followed by clicking ***Next*** to continue.



- **xDSL-PPPoE:** Fill in the data in the **User Name** and **Password** fields, which are supplied by your ISP. Optionally, you might need to specify **Service Name** if your ISP provide it; otherwise, leave that field blank. Click ***Next*** to continue.

Step 3
PPPoE
Please put the necessary information such as username and password got from your ISP to the fields below. In case your ISP gave you a service name, you should put it to the related field.
User Name
Password
Confirm Password
Service Name (Default:NA)
Back
Next
Help

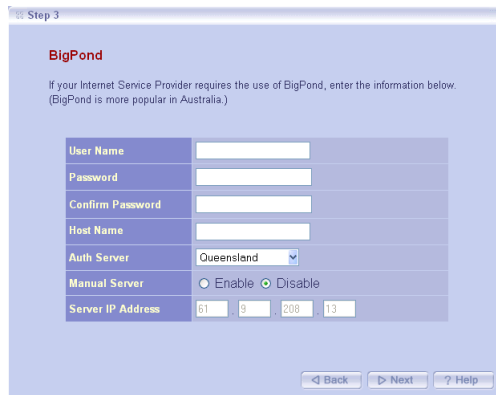
- **xDSL-PPTP:** Fill into the required fields with the data supplied by your ISP. Then click ***Next*** to continue.



  - **User Name**: the user name of your ISP account.
  - **Password**: the password of your ISP account.
  - **Confirmed Password**: re-enter your ISP account password.

- **Service IP Address**: the IP address on remote side of PPTP tunnel supplied by your ISP.
- **My IP Address**: the IP address on local side of PPTP tunnel supplied by your ISP.
- **My Subnet Mask**: the Subnet Mask on local side of PPTP tunnel supplied by your ISP.

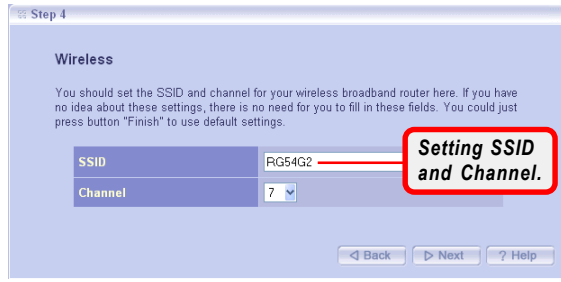
BigPond: Fill into the required fields with the data supplied by your ISP. Then, click ***Next*** to continue.



- **User Name:** the user name of your ISP account.
- **Password:** the password of your ISP account.
- **Confirmed Password:** re-enter your ISP account password.
- **Host Name:** the host name of your router. Some ISPs, usually cable ISPs, require the host name as identification. In most cases, leaving it blank will work.
- **Auth Server:** select your state from the pull-down menu. This will automatically fill in your login Server IP Address in the last field.
- **Manual Server:** if you are in the state that is not listed in the menu here, select Enable in this field and type in the Server IP Address in the next field.
- **Server IP Address:** the IP address of BigPond server supplied by your ISP.

STEP 4 **Configuring the Wireless Network Settings**

You will now see two basic wireless settings: SSID and Channel.


Step 4
Wireless
You should set the SSID and channel for your wireless broadband router here. If you have no idea about these settings, there is no need for you to fill in these fields. You could just press button "Finish" to use default settings.
SSID
RG54G2
Channel
7
Setting SSID and Channel.
Back
Next
Help

- **SSID:** SSID (Service Set Identifier) is the network name (by default: ***RG54G2***). It is case-sensitive and must not exceed 32 characters. To communicate, all wireless devices in the network should share the same SSID.
- **Channel:** Select the channel in the pop-up menu (by default: *7*). All wireless devices in the network must be set at the same channel. If you are running into interference problem, you may need to experiment on different channels to see which channel is of the best signal quality.

Click ***Next*** to continue.

STEP 5 **Summary**

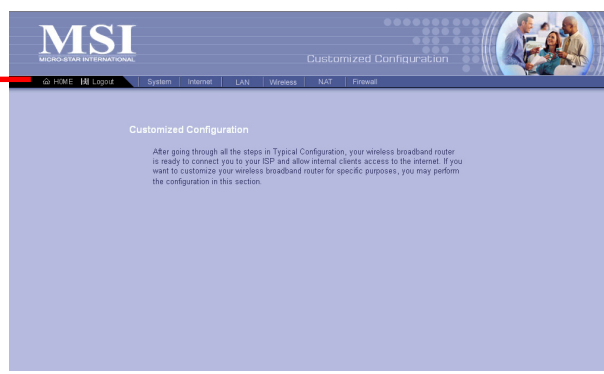
In this last step in Typical Configuration, a summary page appears to show you all configurations you have set. Click ***Finish*** to complete your basic network set up.

After clicking ***Finish***, you are brought to Home page. You may select **Logout** to exit or select **Customized Configuration** continuing to more advanced configuration settings.

6 Configuring Your Router - Advanced

Although your RG54G2 Broadband Router will function fine using the Typical Configuration from Chapter 5, you may wish to explore more advanced options. This chapter explains each parameter and setting procedures for advanced network setup.

Click **Customized Configuration** in the Home window, and the main window appears as below. You can return to Home page by clicking **HOME** button that is available in every page of the Utility, or exit the Utility by clicking **Logout** whenever you want.

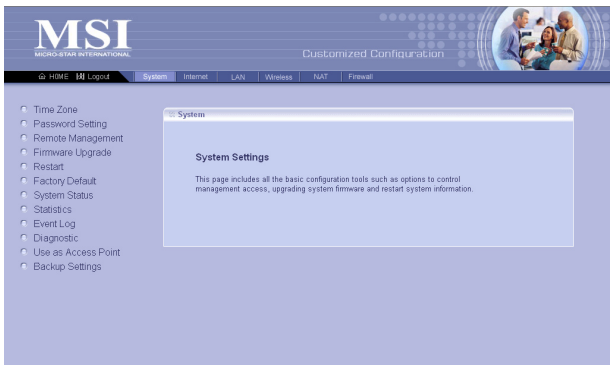

The Menu Bar
MSI
MICRO-STAR INTERNATIONAL
Customized Configuration
HOME
Logout
System
Internet
LAN
Wireless
NAT
Firewall
Customized Configuration
After going through all the steps in Typical Configuration, your wireless broadband router is ready to connect you to your ISP and allow internal clients access to the internet. If you want to customize your wireless broadband router for specific purposes, you may perform the configuration in this section.

Main Window of Customized Configuration

The Customized Configuration is divided into six tabs: **System**, **Internet**, **LAN**, **Wireless**, **NAT**, and **Firewall**. Each tab provides you access to advanced feature settings, and is explained details in the following sections.

>>> 6.1 System Settings

Click **System** tab on the main menu to reach the screen as below, which lists a submenu of all advanced features relating to general system settings.

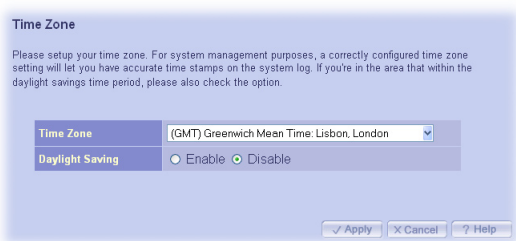


This window includes:
> Time Zone
> Password Setting
> Remote Management
> Firmware Upgrade
> Restart
> Factory Default
> System Status
> Statistics
> Event Log
> Diagnostic
> Use as Access Point
> Backup Settings

> Time Zone

Select Time Zone from the drop-down menu. For system management purpose, a correct time zone setting can provide accurate time stamps on the system log. If you are in an area within daylight saving period, please also select **Enable** in the Daylight Saving option as to automatically adjust for daylight saving time.

Click ***Apply*** to save your changes, or click ***Cancel*** to abandon your changes.


Time Zone
Please setup your time zone. For system management purposes, a correctly configured time zone setting will let you have accurate time stamps on the system log. If you're in the area that within the daylight savings time period, please also check the option.
Time Zone
(GMT) Greenwich Mean Time: Lisbon, London
Daylight Saving
Enable
Disable
Apply
Cancel
Help

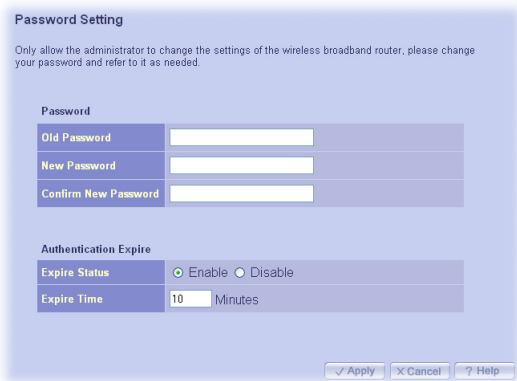
*On each screen, click "**Help**" button will bring up a help window.*

> Password Setting

- Password: This option allows you to change the default password. The RG54G2 router is shipped with the default password ***admin***. To change the setting, enter the old password followed by the new password twice.

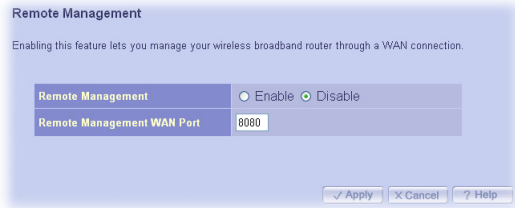
- Authentication Expire: This option allows you to change your login idle time, which is the amount of idle time that elapses before the router automatically logs off the user. Select **Enable** to turn on this function or **Disable** to turn it off. Specify your preferred duration of idle time into **Expire Time** field (by default: ***10*** minutes).

Click ***Apply*** to save your changes, or click ***Cancel*** to abandon your changes.



> Remote Management

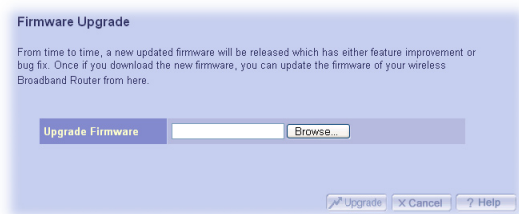
The remote management screen allows you to log into your RG54G2 router remotely via Internet. To enable remote access, select **Enable** (by default: ***Disable***) in **Remote Management** field. Then, specify the port number (by default: ***8080***) that will be open to remote access in **Remote Management WAN Port** field.



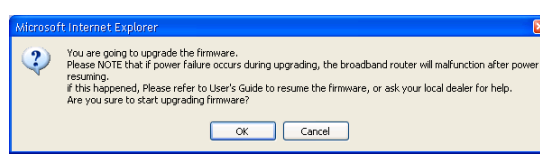
> Firmware Upgrade

This screen enables you to update the firmware.

1. Download the latest firmware file to your computer from MSI website.
2. Click ***Browse*** button to locate your latest firmware file.
3. Click ***Upgrade*** button to upgrade your RG54G2 router with the selected file.


Firmware Upgrade
From time to time, a new updated firmware will be released which has either feature improvement or bug fix. Once if you download the new firmware, you can update the firmware of your wireless Broadband Router from here.
Upgrade Firmware
Browse...
Upgrade
Cancel
Help

4. You are prompted with a dialogue window. Click ***OK*** to go on the firmware upgrade or ***Cancel*** to abandon it.

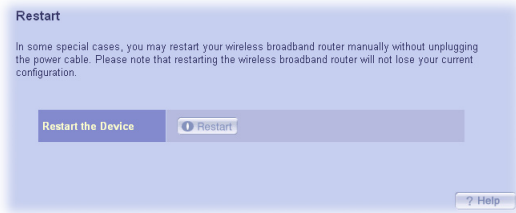

Microsoft Internet Explorer
You are going to upgrade the firmware.
Please NOTE that if power failure occurs during upgrading, the broadband router will malfunction after power resuming.
If this happened, Please refer to User's Guide to resume the firmware, or ask your local dealer for help.
Are you sure to start upgrading firmware?
OK
Cancel

5. A dialogue window appears to reveal the upgrade is going on. Please wait and you will be brought to login page as soon as the upgrade is completed.

> Restart

In addition to press **RESET** button for one second or unplug the power adapter, this screen provides you with another way to restart your RG54G2 router in the case you are unable to reach the hardware.

1. Click **Restart** button to initiate your router rebooting.


Restart
In some special cases, you may restart your wireless broadband router manually without unplugging the power cable. Please note that restarting the wireless broadband router will not lose your current configuration.
Restart the Device
Restart
Help

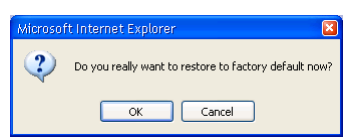
2. A dialogue window appears to reveal the rebooting is going on. Please wait and you will be brought to login page as soon as the rebooting is done.

> Factory Default

In addition to press **RESET** button for five seconds, this screen allows you to reset all configuration settings into factory default values via Utility.

1. Click **Restore** button to initiate your router restoring.

2. You are prompted with a dialogue window to make certain your intention in restoring factory default. Click ***OK*** to go on or ***Cancel*** to abandon.



3. A dialogue window appears to reveal the restoring is going on. Please wait and you will be brought to login page as soon as the restoring is done.

> System Status

The System Status screen displays the router's all configuration settings, containing respectively in General, Internet, LAN, and Wireless setting tables. Click ***Refresh*** to reload your router's most updated status data.

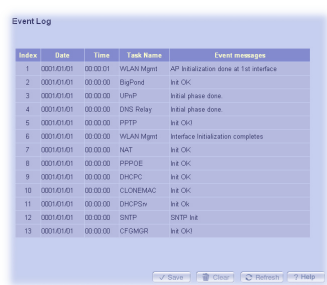
In the column of **WAN IP Address**, there are two buttons: **Release** and **Renew**. If you are using a Dynamic IP address connecting to Internet, you can click ***Release*** to break your Internet connection and release IP address, or click ***Renew*** to retrieve a new IP for your connection.

> Statistics

This Statistics screen displays all necessary statistics of the RG54G2 router, providing you a full monitoring and control of this router's performance. Click ***Refresh*** to reload your router's most updated statistics data.

> Event Log

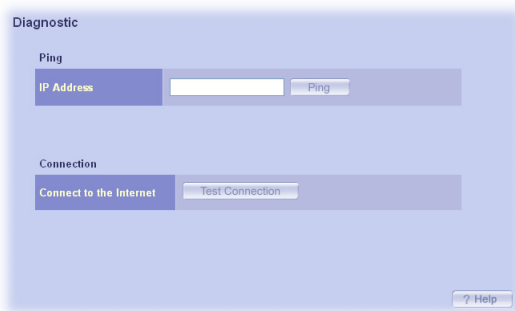
The Event Log screen records the last **128** events (network activities) that occur on your RG54G2 router. This data is useful for monitoring and troubleshooting your network, but recording a big volume of logs might adversely affect the router's performance.


Event Log
Index Date Time Task Name Event messages
1 0001/01/01 00:00:01 WLAN Mgmt AP Initialization done at 1st interface
2 0001/01/01 00:00:00 BigPond Init OK!
3 0001/01/01 00:00:00 UPnP Initial phase done.
4 0001/01/01 00:00:00 DNS Relay Initial phase done.
5 0001/01/01 00:00:00 PPTP Init OK!
6 0001/01/01 00:00:00 WLAN Mgmt Interface Initialization completes
7 0001/01/01 00:00:00 NAT Init OK!
8 0001/01/01 00:00:00 PPPOE Init OK!
9 0001/01/01 00:00:00 DHCPC Init OK!
10 0001/01/01 00:00:00 CLONEMAC Init OK!
11 0001/01/01 00:00:00 DHCPSrv Init Ok
12 0001/01/01 00:00:00 SNTP SNTP Init
13 0001/01/01 00:00:00 CFGMGR Init OK!
Save
Clear
Refresh
Help

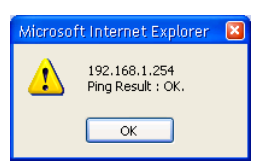
- **Save** button: Since only a limited of system log entries can be stored in RG54G2 router, you can save the log file into your computer by clicking this button.
- **Clear** button: You can remove all bug entries from your RG54G2 router by clicking this button.
- **Refresh** button: You can update the bug entry record by clicking this button.

> Diagnostic

This Diagnostic screen provides you with two ways to check your network connections.



- **Ping:** Enter into the field with the **IP address** of the device you would like to ping. The device could be either on LAN or on the Internet; then, click **Ping** button to initiate Ping procedure. The results will be displayed in the following pop-up window.



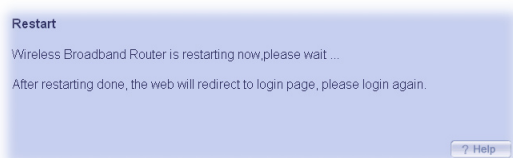
- **Connection:** Click the **Test Connection** button to start trying to access the Internet through your router.

> Use as Access Point

MSI RG54G2 Broadband Router could be configured into **Access Point mode**, only acting as a bridge between the computers attached to all Ethernet ports (LAN) and the clients on the wireless LAN (WLAN). To operate at AP mode, your RG54G2 has to be configured to share the same subnet mask as other LAN and WLAN devices.

1. Check the **Enable AP Mode** option. Click ***Apply*** to save your changes or ***Cancel*** to abandon the changes.

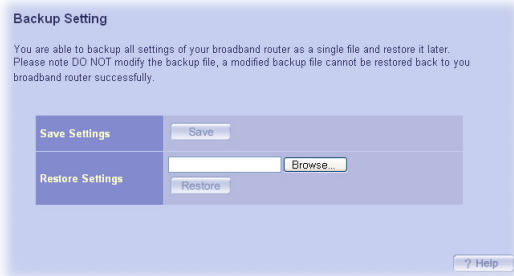
2. A dialogue window appears to reveal the configuration is resetting. Please wait and you will be brought to login page as soon as the resetting is done.


Restart
Wireless Broadband Router is restarting now,please wait ...
After restarting done, the web will redirect to login page, please login again.
Help

At AP mode, the internal NAT, Firewall, and DHCP server will be disabled; one WAN port and four LAN ports are bridged together. The menu bar turns out to appear with only two tabs: **System** and **Wireless**.

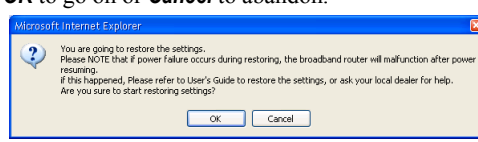
> Backup Settings

This option allows you to save the current configuration profile of your RG54G2 router onto your computer. In time of need, you can restore an earlier profile onto your RG54G2 router.

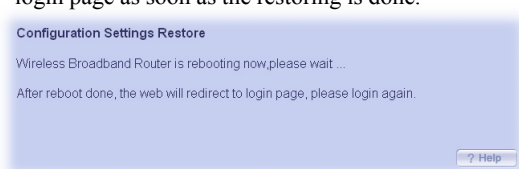

Backup Setting
You are able to backup all settings of your broadband router as a single file and restore it later.
Please note DO NOT modify the backup file, a modified backup file cannot be restored back to you broadband router successfully.
Save Settings
Save
Restore Settings
Browse...
Restore
? Help

- **Save Settings:** Click ***Save*** to download a copy of cur rent configuration profile and save that file to your computer.
- **Restore Settings:**

1. If you want to restore an earlier configuration profile back to the RG54G2 router, click ***Browse*** to select the file you want, followed by clicking ***Restore*** to upload the configuration file.
2. You are prompted with a dialogue window to make certain your intention in restoring the profile. Click ***OK*** to go on or ***Cancel*** to abandon.


Microsoft Internet Explorer
You are going to restore the settings.
Please NOTE that if power failure occurs during restoring, the broadband router will malfunction after power resuming.
If this happened, Please refer to User's Guide to restore the settings, or ask your local dealer for help.
Are you sure to start restoring settings?
OK
Cancel

3. Following is the dialogue window reveals the restoring is going on. Please wait and you will be brought to login page as soon as the restoring is done.


Configuration Settings Restore
Wireless Broadband Router is rebooting now,please wait ...
After reboot done, the web will redirect to login page, please login again.
? Help

>>> 6.2 Internet Settings

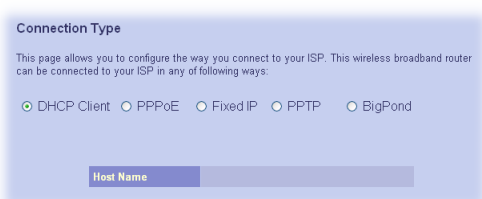
Click **Internet** tab on the main menu to reach the screen as below, which lists a submenu of all advanced features relating to Internet settings.

This window includes:
> Connection Type
> MAC Clone
> DNS
> Dynamic DNS

Click each item in the submenu and follow the instructions to manage advanced Internet settings of your RG54G2 broadband router.

> Connection Type

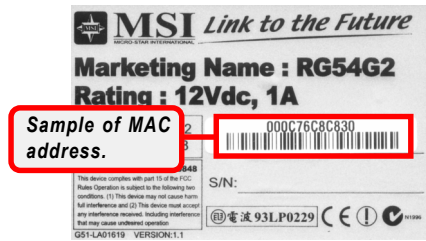
This screen provides you with a selection of Internet connection types. According to the connection type your ISP provides, select an appropriate option.


Connection Type
This page allows you to configure the way you connect to your ISP. This wireless broadband router can be connected to your ISP in any of following ways:
DHCP Client
PPPoE
Fixed IP
PPTP
BigPond
Host Name

For detailed instructions on how to set your connection type, please refer to *Step 2* and *Step 3* in *Section 5.2*.

> MAC Clone

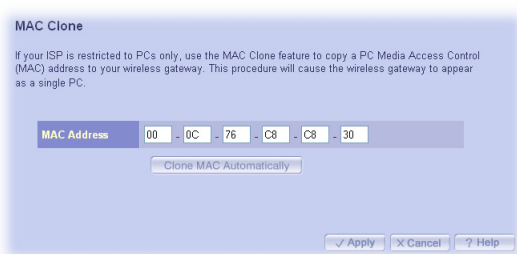
A MAC address is a 12-digit code assigned to a unique piece of hardware for identification. You can find the MAC address of your RG54G2 router on the label on its bottom case.



The **MAC Address** on this screen refers to the address on the Internet (WAN) interface. If you need to provide your ISP with a MAC address for registration, provide the default MAC address indicated on the label.

If you have already registered a MAC address in your ISP, you can change your RG54G2 router's MAC address to match the address recorded by your ISP.

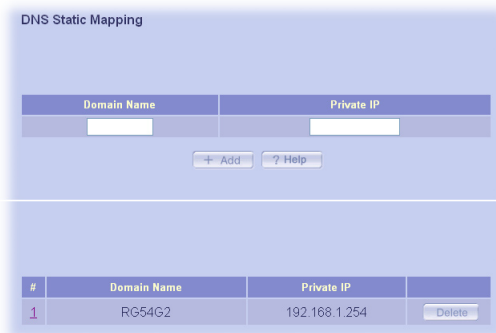
1. Enter the MAC address into the **MAC Address** field that is registered in your ISP.
2. Click **Clone MAC Automatically** button. Next, click ***Apply*** to actually change the address used or ***Cancel*** to abandon the change.


MAC Clone
If your ISP is restricted to PCs only, use the MAC Clone feature to copy a PC Media Access Control (MAC) address to your wireless gateway. This procedure will cause the wireless gateway to appear as a single PC.
MAC Address
00 - 0C - 76 - C8 - C8 - 30
Clone MAC Automatically
Apply
Cancel
Help

> DNS

MSI RG54G2 router offer DNS (Domain Name System) feature. DNS is able to translate Internet domain names to IP addresses. This DNS screen can be used to add the mappings between a Private Static IP and a Domain Name. Such a feature is helpful for setting up devices like FTP server.

1. Enter **Domain Name** and **Private IP** into the respective fields.
2. Click ***Add*** to apply the setting. Then, the data entry will appear in the below DNS table.
3. Click ***Delete*** if you want to remove the data entry from the table.



> Dynamic DNS

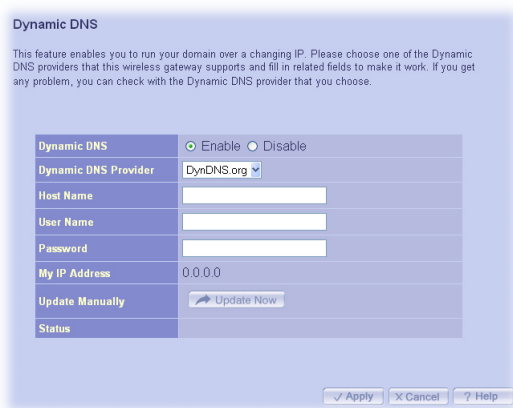
MSI RG54G2 router supports Dynamic DNS (DDNS) feature, which allows you to assign a fixed host and domain name to a dynamic Internet IP address. Each time the MSI RG54G2 router is booted, it will re-register its domain-name-to-IP-address mapping with DDNS service provider. This is the reason Internet users can access your router using the domain name, but not the IP address.

Note: *Before using this feature, you need to sign up for DDNS service with service providers.*

---

1. First, check **Enable** in the **Dynamic DNS** field to activate the feature.
2. Select your **Dynamic DNS Provider** in the drop-down menu.
3. Enter the **Host Name** that you are used to register with your DDNS provider.
4. Enter your **User Name** that is required to log into your DDNS account.
5. Enter your **Password** that is required to log into your DDNS account.
6. **My IP Address** is showing your router's current IP ad dress assigned.
7. Click **Update Now** button if you want to remove original settings. Otherwise, skip this field.
8. **Status** field displays the status of DDNS connection, which is returned by DDNS server.

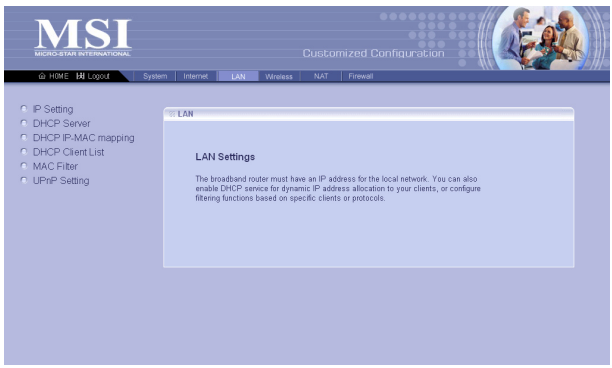
Click ***Apply*** to save the DDNS settings, or ***Cancel*** to abandon the settings.


Dynamic DNS
This feature enables you to run your domain over a changing IP. Please choose one of the Dynamic DNS providers that this wireless gateway supports and fill in related fields to make it work. If you get any problem, you can check with the Dynamic DNS provider that you choose.
Dynamic DNS
Enable
Disable
Dynamic DNS Provider
DynDNS.org
Host Name
User Name
Password
My IP Address
0.0.0.0
Update Manually
Update Now
Status
Apply
Cancel
Help

>>> 6.3 LAN Settings

Click **LAN** tab on the main menu to reach the screen as below, which lists a submenu of all advanced features relating to LAN settings.

This window includes:
> IP Setting
> DHCP Server
> DHCP IP-MAC mapping
> DHCP Client List
> MAC Filter
> UPnP Setting

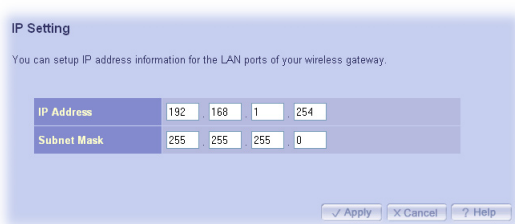


Click each item in the submenu and follow the instructions to manage advanced LAN settings of your RG54G2 broadband router.

> IP Setting

This option allows you to create your own private network.

1. Enter an **IP address** string that you will use for your private network, you can choose any string you prefer. (By default: ***192.168.1.254***)
2. Enter a **Subnet Mask** address that you will use for your network. (By default: ***255.255.255.0***)



> DHCP Server

A DHCP (Dynamic Host Control Protocol) server automatically assigns IP address to all the clients on your network. This screen allows you to configure the DHCP server settings of your RG54G2 router.

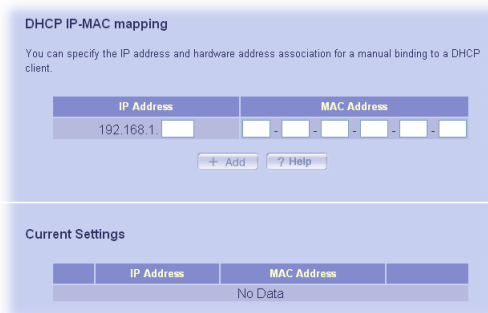
1. Check ***Enable*** option to enable DHCP function in your RG54G2 router. If you already have a DHCP server running on your network or you do not want to enable it, select ***Disable*** option.
2. Specify a numerical value in **IP Pool Starting Address** field as the first address being assigned by DHCP server. (By default, it is ***192.168.1.1.***)
3. Specify a numerical value in **IP Pool Ending Address** field as the last address being assigned by DHCP server. The numbers from **1** to **253** are available for use. (By default, it is ***192.168.1.32.***)
4. Specify a numerical value in **Lease Time** field to define the lease duration a network user will be allowed connecting to the router with their current dynamic IP address.

Click ***Apply*** to save the changes, or ***Cancel*** to abandon.

> DHCP IP-MAC Mapping

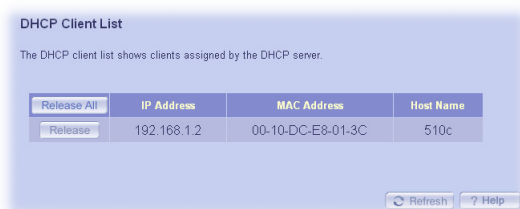
If you require specifying an IP address for a certain network device, you can use this feature to create a mapping table.

1. Enter a specific **IP Address** you like to reserve and the **MAC Address** of that device's network card.
2. Following by pressing ***Add*** button.
3. The reserved IP address along with its associated MAC address is displayed in **Current Settings** field.
4. You can add more reservations, or click ***Delete*** to remove the correspondent entry.



> DHCP Client List

This screen is used to show you the current clients on your network that have been assigned IP addresses by your RG54G2 DHCP server.



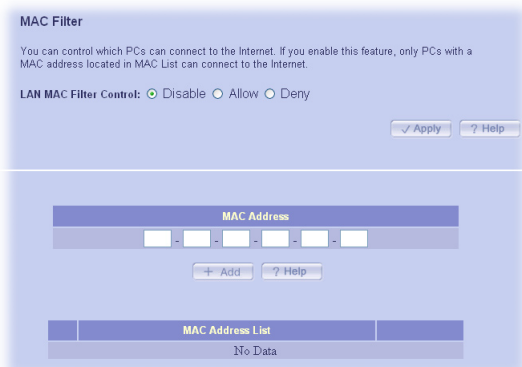
Click ***Refresh*** to obtain an updated list, or click ***Release*** to delete a certain client from the list or ***Release All*** to delete the entire listed clients.

> MAC Filter

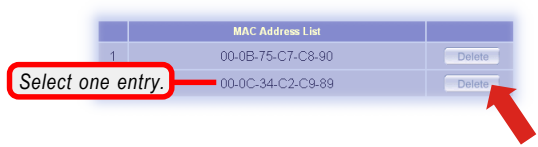
This option enables you to define a list of MAC addresses, controlling which device is permitted to access to your network. Select one rule from **LAN MAC Filter Control** field:

1. **Disable**: Select to disable MAC Filter function if you do not want to filter users by MAC address. Or,
2. **Allow**: Select to allow only the devices in the MAC Address list to access to your network. Or,
3. **Deny**: Select to deny the devices in the MAC Address list to access to your network.

Click ***Apply*** to save your changes after selecting a rule.

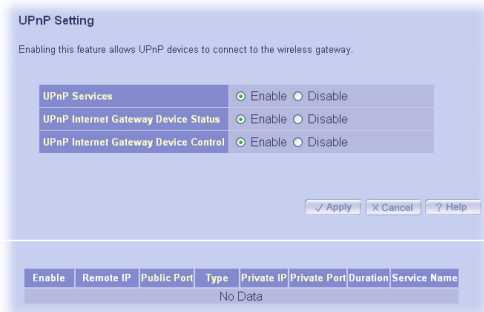

MAC Filter
You can control which PCs can connect to the Internet. If you enable this feature, only PCs with a MAC address located in MAC List can connect to the Internet.
LAN MAC Filter Control: Disable Allow Deny
Apply
Help
MAC Address
Add
Help
MAC Address List
No Data

- To add a MAC Address to your list:
  1. Enter a **MAC Address** into the field.
  2. Click ***Add*** to add the entry to the **MAC Address List**.
  3. Click the ***Delete*** button next to the desired MAC address to remove it from the list.



> UPnP Setting

UPnP (Universal Plug-and-Play) is a technology that offers seamless operation of voice messaging, video messaging, games, and other applications that are UPnP-compliant. Those applications usually require the router's firewall to be configured a specific way to operate properly. With UPnP support, those applications have the ability to communicate with router, basically "telling" the router which way it needs the firewall configured.



1. **UPnP Service**:

Enable	Turn on UPnP function in RG54G2.
Disable	Turn off UPnP function in RG54G2.

2. **UPnP Internet Gateway Device Status**:

Enable	PC will keep polling router's status and display packet information. Be noted, this will increase network loads, affect router's performance, and have a compromized security.
Disable	PC will not poll router's status and no packet information is displayed. No extra loads on your network.

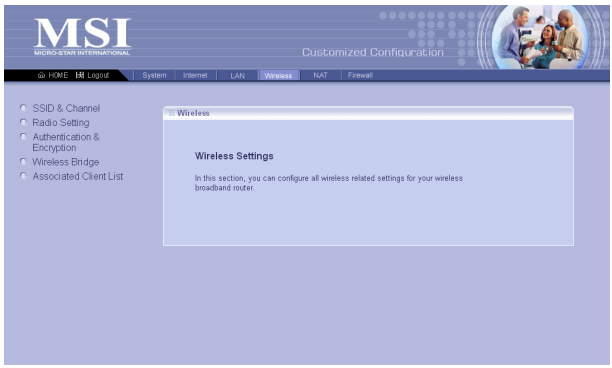
3. **UPnP Internet Gateway Device Control**:

Enable	The PC running with UPnP application is allowed to configure the settings of your router.
Disable	The PC running with UPnP application is blocked to configure the settings of your router if any security concern.

>>> 6.4 Wireless Settings

Click **Wireless** tab on the main menu to reach the screen as below, which lists a submenu of all advanced features relating to Wireless settings.

This window includes:
> SSID & Channel
> Radio Setting
> Authentication & Encryption
> Wireless Bridge
> Associated Client List



Click each item in the submenu and follow the instructions to manage advanced Wireless settings of your RG54G2 broadband router.

> SSID & Channel

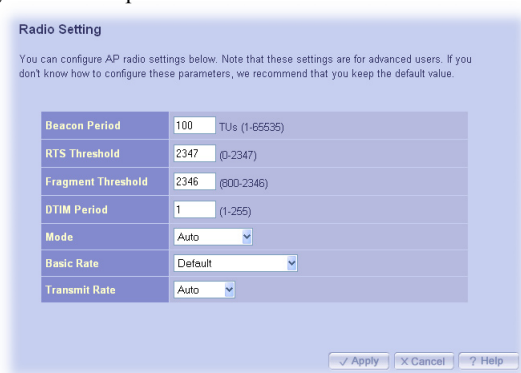
In this screen, you can make changes to your **SSID** and **Channel**.

1. **SSID**: SSID (Service Set Identifier) is the network name (by default: ***RG54G2***). It is case-sensitive and must not exceed 32 characters. To communicate, all wireless devices in the network should share the same SSID.
2. **Channel**: Select the channel in the pop-up menu (by default: *7*). All wireless devices in the network must be set at the same channel. If you are running into interference problem, you may need to experiment on different channels to see which channel is of the best signal quality. The settings of Channel 1, 6 and 11 are non-overlapping.
3. **Accept Broadcast SSID**: Check this option if you want to broadcast your router's SSID, which enable all the devices on your network to detect the SSID broadcast by the RG54G2 router. Remove the check mark if you do not want to broadcast your router's SSID.

Click ***Apply*** to save the setting, or ***Cancel*** to cancel the changes.

> Radio Setting

This screen is used to set up your router's advanced radio features. If you do not know how to configure these parameters, we recommend you keep the default values preventing from impacting on your router's performance.



1. **Beacon Period** (**TUs**, Time Units): The default value is ***100*** milliseconds. This value refers to the frequency interval that your router broadcasts a beacon to synchronize the wireless network. As broadcasting beacon do use additional bandwidth, lowering beacon period too much might adversely affect the wireless performance.
2. **RTS Threshold (0-2347)**: The default value is ***2347*** bytes. This value refers to the packet size at which the router issues an RTS (Request To Send) frame to a receiving wireless station. Any frames larger than specified RTS threshold must be transmitted following the RTS/CTS handshake exchange mechanism. After receiving an RTS, the wireless station responses with a CTS (Clear To Send) frame to acknowledge the right to begin data transmission. The RTS/CTS mechanism is used to minimize collisions among wireless stations.
3. **Fragmentation Threshold (800-2346)**: The default value is ***2346*** bytes. This value refers to the size at which a packet is divided into smaller pieces that are transmitted separately to receiving wireless station. If there is a high packet error rate, you may need to experiment on different fragmentation values to find the best performance.
4. **DTIM Period (1-255)**: The default value is **1** beacon period. This value refers to the time interval at which the router broadcasts a DTIM (Delivery Traffic Indication Message) to inform clients in power saving mode to wake up for listening to broadcast and multicast messages.
5. **Mode**: The default wireless mode is **Auto**. If you have both 11b and 11g clients on your network, keep the factory default mode, **Auto**. You can also select **802.11g Only** mode from the pull-down menu if you want to prevent 11b clients accessing to your network, or **802.11b Only** mode if you want to work with 11b clients only.

6. **Basic Rate**: The default rate is ***Default***. The **Basic Rate** is not the same as the **Transmission Rate**, but a series of rates that the router broadcasts to clients to make them aware of over what rate they can transmit. With **Default** Basic Rate, the router will broadcast that it will automatically transmit at the best rate. You can also select another option (**1,2,5.5,11,6,12,24Mbps**) to broadcast only slower rate available.
7. **Transmit Rate**: The default rate is ***Auto***. With the default setting, your router will enable Auto-Fallback feature and automatically select the best possible data rate for transmission. From the pull-down menu, a range of other fixed transmission rates are also selectable.
8. **PRISM Nitro™**: The default is ***Disable***. Enabling this **Nitro™** mode should improve your network performance, either 3 times faster data rates in mixed environment where both 11g and 11b clients exist, or 50% more data throughput in 11g-only environment.

Click ***Apply*** to save the setting, or ***Cancel*** to cancel the changes.

> **Authentication & Encryption**

This feature enables you to manage your wireless network security with different authentication and encryption methods.

Authentication	Encryption	WEP key 1~4
Open or shared key	None WEP-64 bits WEP-128 bits	Not required 10 hex 26 hex
Shared key	WEP-64 bits WEP-128 bits	10 hex 26 hex
WPA	TKIP	Not required
802.1x	None WEP-64 bits WEP-128 bits	Not required 10 hex 26 hex

Method 1:

1. Select **Both** from the drop-down menu of **Network Authentication** field. With this setting, your router will switch between two authentication subtypes, **Open** and **Shared Key**, based on your client's request.

   - Open: Under this, it allows any wireless stations to access to the router without asking a shared secret key, but the wireless station can communicate only if its WEP key matches with the router's.

   - Shared Key: It works only if the WEP Key option is on. It requires a wireless station providing a shared key to be authenticated by the router. Once its shared key is proved as correct, the wireless station is allowed to communicate with the router.

2. Select **None** from the drop-down menu of **Encryption Type** field. With this setting, no encryption mechanism is enabled.

Example 1: Authentication - Both, Encryption - None.

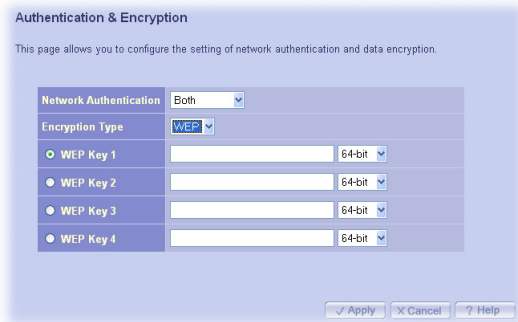
Or,

3. Select **WEP** from the drop-down menu of **Encryption Type** field. With WEP enabled, you can further choose low-level **(64-bit)** or high-level **(128-bit)** encryption schemes for each of your encryptions keys. It is possible to enter up to four (4) WEP Keys.

   - 64-bit WEP Key: Under this, it allows you to manually enter five (5) digits of alphanumeric characters, ex. "1gmi4".

- 128-bit WEP Key: Under this, it allows you to manually enter thirteen (13) digits of alphanumeric characters, ex. “1k8gf40kj1”.

Example 2: Authentication - Both, Encryption - WEP.



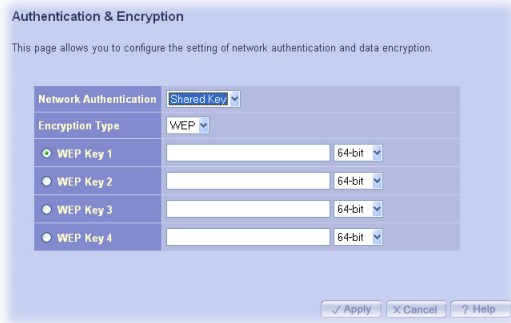
Click ***Apply*** to save the settings, or ***Cancel*** to cancel the changes.

Method 2:

1. Select **Shared Key** from the drop-down menu of **Network Authentication** field; then your router will use shared key mechanism to process all authentication requests.
2. **WEP** encryption is automatically enabled.
3. Enter your 64-bit or 128-bit WEP keys into the entries.

Click ***Apply*** to save the settings, or ***Cancel*** to cancel the changes.

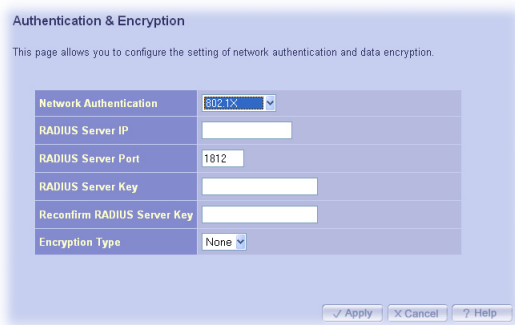
Example 3: Authentication - Shared Key, Encryption - WEP.



Method 3:

1. Select **802.1X** from the drop-down menu of **Network Authentication** field, only if there is a Radius Server on your network for centralized authentication. It is typically used in business environment.
2. Enter into **RADIUS Server IP** field with IP address of the Radius server used for 802.1x wireless authentication.
3. Enter port number into **RADIUS Server Port** field. The default is **1812**.
4. Enter the **RADIUS Server Key** twice for confirmation. The key is shared between the Radius server and your router.
5. Select **None** not to enable WEP function.

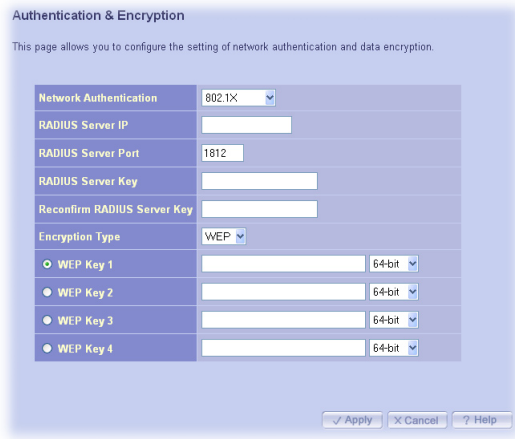
Example 4: Authentication - 802.1X, Encryption - None.



Or,

6. Select **WEP** to enable WEP function; then, set the encryption level and the WEP Keys.

Example 5: Authentication - 802.1X, Encryption - WEP.



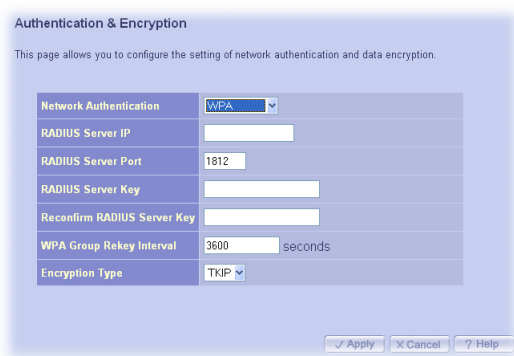
Click ***Apply*** to save the settings, or ***Cancel*** to cancel the changes.

Method 4:

1. Select **WPA** from the drop-down menu of **Network Authentication** field, only if there is a Radius Server on your network for centralized authentication. WPA (WiFi-Protected Access) is typically used in business environment.
2. Enter into **RADIUS Server IP** field with IP address of the Radius server used for WPA authentication.
3. Enter port number into **RADIUS Server Port** field. The default is ***1812***.
4. Enter the **RADIUS Server Key** twice for confirmation. The key is shared between the Radius server and your router.
5. Enter a numerical value into **WPA Group Rekey Interval**, which specifies the time duration (in seconds) after which your router changes a new group key. The default is ***3600***.
6. **TKIP** feature in **Encryption Type** field is automatically selected.

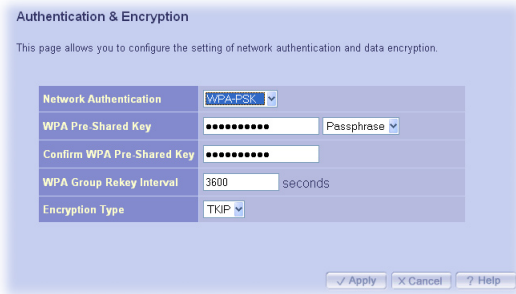
Click ***Apply*** to save the settings, or ***Cancel*** to cancel the changes.

Example 6: Authentication - WPA, Encryption - TKIP.



Method 5:

Example 6: Authentication - WPA-PSK, Encryption - TK P.



> Wireless Bridge

Wireless Bridge (also known as WDS, Wireless Distribution System) allows you to extend the range of your network infrastructure by connecting RG54G2 with each other wirelessly. It offers you great flexibility to configure your network in numerous ways.

***Note**: All RG54G2 routers in Wireless Bridge mode must be set at the same channel as to communicate with each other.*

***Note**: An RG54G2 router in Wireless Bridge mode can maintain up to **four** different wireless connections to other routers.*

- WDS: Star Topology (Figure 1.)

In this star topology, an RG54G2 router acts as a central point and talks with several other RG54G2 routers as depicted below. The satellite RG54G2 routers are positioned to extend the wireless range, and each of them can serve their own wired and wireless infrastructure network.

- WDS: Chain Topology (Figure 2.)

In this chain topology, the satellite RG54G2 routers are chained together starting from a root RG54G2 router as illustrated below.

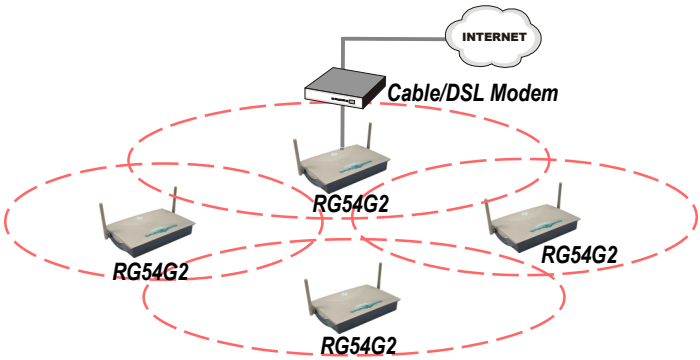


Figure 1. Star Configuration

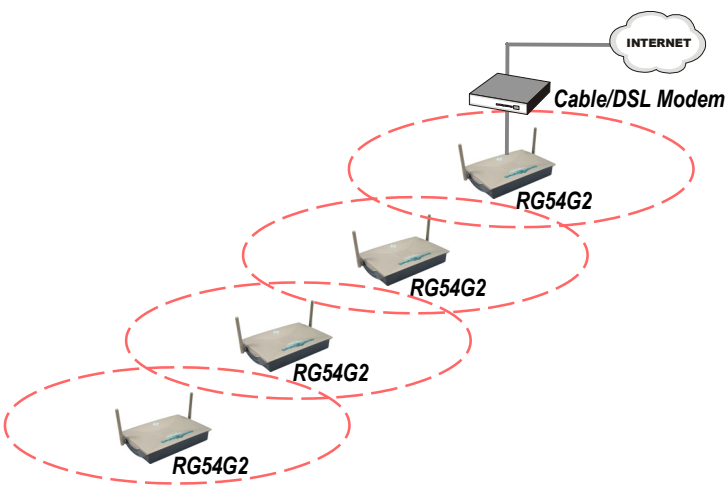
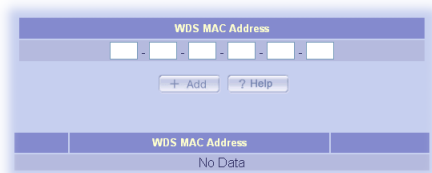


Figure 2. Chain Configuration

To configure the WDS settings of your RG54G2 routers,

1. Select **Enable** in **Wireless Bridge** field if you want your RG54G2 router performs as a bridge/repeater.
2. Check **Enable** in **WDS Only** field if you want set up this router dedicatedly connecting with only other routers. (Wireless clients are not allowed to associate with it.) Otherwise, remove check from the box.
3. Click **Apply** to save the settings, or **Cancel** to cancel the changes.

4. Enter **MAC Addresses** of other RG54G2 routers that are allowed to talk with this RG54G2 router as partners in the WDS network.
5. Click **Add** button to add the specified MAC Address into the **WDS MAC Address** list. Click **Delete** whenever you want to remove a specified device.



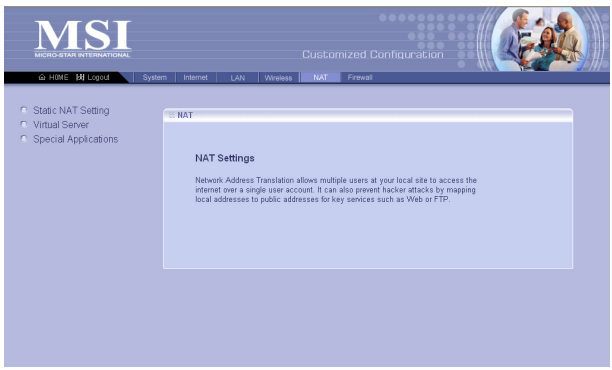
> Association Client List

This screen displays a list of wireless stations, which are associated with your RG54G2 router, by their MAC addresses. Click ***Refresh*** to update the list.

>>> 6.5 NAT Settings

Click **NAT** tab on the main menu to reach the screen as below, which lists a submenu of all advanced features relating to NAT settings. NAT (Network Address Translation) translates multiple private IP address to single public IP address.

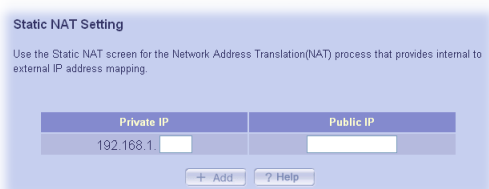
This window includes:
> Static NAT Setting
> Virtual Server
> Special Applications



Click each item in the submenu and follow the instructions to manage advanced NAT settings of your RG54G2 broadband router.

> Static NAT Setting

This option allows you to configure your router's virtual server setting based on **IP forwarding**. With IP forwarding setting, all Internet requests for a specified public IP will be forwarded to a certain PC with the correspondent private IP.

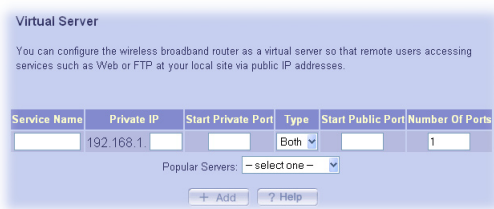

Static NAT Setting
Use the Static NAT screen for the Network Address Translation(NAT) process that provides internal to external IP address mapping.
Private IP
Public IP
192.168.1.
Add
Help

1. Input a **Private IP**, ex. 192.168.1.251, and a **Public IP**, ex. 213.18.18.253, into the respective fields.
2. Click ***Add*** button to continue.
3. Your new data entry will be displayed in the **Current Settings** list. Click ***Delete*** if you want to remove it.

> Virtual Server

This option allows you to configure your router's virtual server setting based on **Port forwarding**. Virtual Server feature helps you set up a server on your private network accessible by Internet users. With port forwarding setting, all Internet requests for a specified public IP, based on their ports, will be forwarded to a certain PC with the correspondent private port.

- To choose a known server:
  1. You can select a **Popular Server** (ex. HTTP, Net-Meeting, POP3 etc.) from the drop-down menu. All fields except **Private IP** are automatically filled in data.
  2. Specify the IP address of your PC into **Private IP** field.
  3. Click ***Add*** button to continue.



  4. Your new data entry will be displayed in the **Virtual Server list**. Click ***Delete*** if you want to remove it.

- To choose a custom server:
  1. **Service Name**: Manually define a name for the server you want to configure.

2. **Private IP**: Manually input a private IP address for your server
3. **Start Private Port**: Manually enter a private port number, where the forwarded requests will arrive at.
4. **Type**: Select from the drop-down menu of either TCP or UDP protocol
5. **Start Public Port**: Manually enter a public port number, the requests from which should be forwarded.
6. **Number of Ports**: Manually enter the number of ports setting for virtual server.
7. Click ***Add*** button to continue.
8. Your new data entry will be displayed in the **Virtual Server list**. Click ***Delete*** if you want to remove it.

> Special Applications

This option is used for special applications, such as instant messaging or some Internet games, whose outgoing ports should differ from incoming ports.

Commonly, you run a PC application to access the Internet. It typically initiates communications with a computer on the Internet. In some special applications, the computer on the Internet also initiates communications with your PC. If you use such applications through a PC behind your router, you need to configure your router to support **Port Triggering** as to perform those special applications in proper manner.

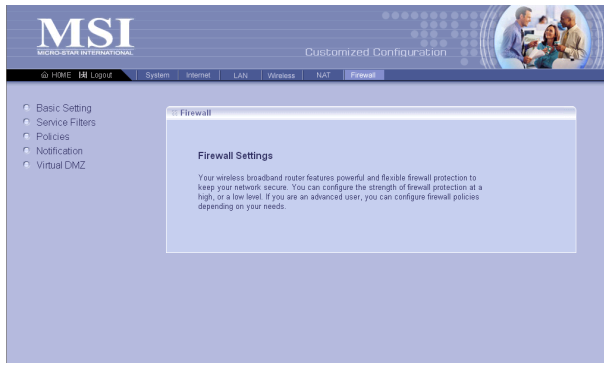
- To choose a known application:
  1. You can select a **Popular Application** (ex WarCraft) from the drop-down menu. All fields are automatically filled in data.
  2. Click ***Add*** button to continue.
  3. Your new data entry will be displayed in the **Special Applications** list. Click ***Delete*** if you want to remove the entry.

To choose a custom application:

1. **Trigger Port:** Manually specify the range of the port numbers used by your application, opened for outbound data. Check the instructions in your application's user manual.
2. **Trigger Type:** Select **UDP**, **TCP**, or **Both** for the Trigger Port.
3. **Public Port:** Manually specify the range of the port numbers used by your application, opened for inbound data. Check the instructions in your application's user manual.
4. **Public Type:** Select **UDP**, **TCP**, or **Both** for the Public Port.
5. Click ***Add*** button to continue.
6. Your new data entry will be displayed in the **Special Applications** list. Click ***Delete*** if you want to remove the entry.

>>> 6.6 Firewall Settings

Click **Firewall** tab on the main menu to reach the screen as below, which lists a submenu of all advanced features relating to Firewall settings.

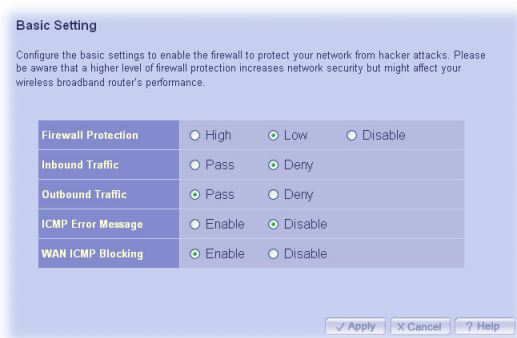


This window includes:
> Basic Setting
> Service Filters
> Polices
> Notification
> Virtual DMZ

Click each item in the submenu and follow the instructions to manage advanced Firewall settings of your RG54G2 broadband router.

> Basic Setting

This screen helps you configure basic rules of the firewall equipped with your router.



1. **Firewall Protection**:

High	Check **High** box only if your broadband bandwidth is > 2Mbps. It protects your network in high-level security, yet causes heavy network loads on your router.
Low	Check **Low** box if your broadband bandwidth is < 2Mbps. It protects your network in low-level security, yet causes only small network loads on your router.
Disable	Check **Disable** box to turn off the firewall function, if needed.

2. **Inbound Traffic**:

Pass	Check **Pass** box if all inbound traffic is permitted.
Deny	Check **Deny** box if all inbound traffic is denied.

3. **Outbound Traffic**:

Pass	Check **Pass** box if all outbound traffic is permitted.
Deny	Check **Deny** box if all outbound traffic is denied.

4. **ICMP Error Message**:

Pass	Check **Pass** box if all ICMP error messages are permitted.
Deny	Check **Deny** box if all ICMP error messages are denied.

5. **WAN ICMP Blocking**:

Pass	Check **Pass** box to allow ICMP packets received from the Internet.
Deny	Check **Deny** box to ignore ICMP packets received from the Internet.

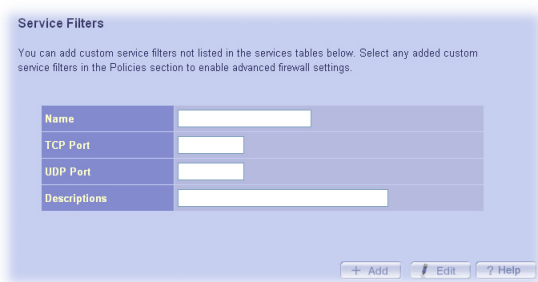
Your configuration of the firewall will be displayed in the below **Basic Setting List**, depending on the parameters you set in the preceding steps.

> Service Filters

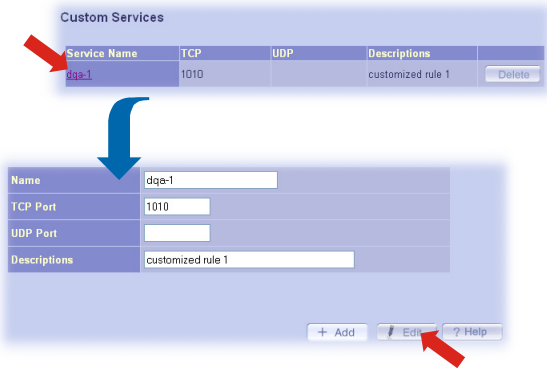
This screen provides you with the ability to add custom service filters, up to 32 entries, which are not listed in the **Well-Known Services** list and are pre-set in your RG54G2 router already.

To define a custom filter:

1. Specify **Name** of the custom service filter.
2. Input port number in either **TCP Port** field, or **UDP Port** field, or in both fields.
3. Enter a short description of the service in **Descriptions** field.
4. Click ***Add*** button to add the new entry, which will be displayed in **Custom Services** table.


Service Filters
You can add custom service filters not listed in the services tables below. Select any added custom service filters in the Policies section to enable advanced firewall settings.
Name
TCP Port
UDP Port
Descriptions
Add
Edit
Help

- To modify a defined custom filter:
  1. Click ***Service Name*** field of that particular custom service filter; then, the current entry data is automatically shown on **Service Filter** screen.
  2. Change data into the necessary fields.
  3. Click ***Edit*** button to confirm your changes; then the corresponding data entry in **Custom Services** list will be changed accordingly.



> Policies

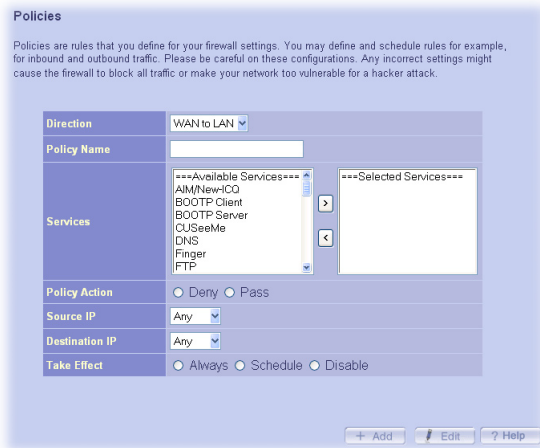
This option allows you to define different firewall polices, up to 32 entries, to control and monitor any inbound and outbound packets on your network.

To define a **WAN to LAN** policy:

1. Select **WAN to LAN** from the drop-down menu of **Direction** field. Here, WAN to LAN is defined as **Inbound** data control policy.
2. Enter a descriptive name in **Policy Name** field.
3. Select the service you want to configure from **Available Services** list, and click "**>**" button to transfer it to **Selected Services** list. (To remove a service from Selected Services list, select it and click "<" button to return it back to Available Services list.) This determines which packets are covered by this rule.

4. Select the desired action covered by this policy in **Policy Action** field.

Deny	Check ***Deny*** option to block the data that meets the selected settings.
Pass	Check ***Pass*** option to permit the data that meets the selected settings.



5. Select from the drop-down menu of **Source IP** field. This defines the packets from which sources are covered by this policy based on their source IP(WAN) addresses.

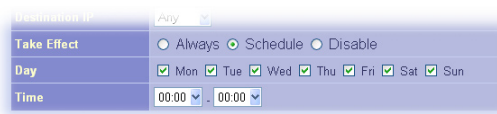
Any	Select ***Any*** if all WAN IP addresses should be covered by this policy.
Single	Select ***Single*** if only a specific IP address is covered by this policy. Enter that required WAN IP address into the following blank box.
Range	Select ***Range*** if a range of IP address is covered by this policy. Enter the range of WAN IP addresses into the following blank boxes.

6. Select from the drop-down menu of **Destination IP** field. This defines the packets to which PCs or servers are covered by this policy based on their destination IP (LAN) addresses.

Any	Select ***Any*** if all LAN IP addresses should be covered by this policy.
Single	Select ***Single*** if only a specific IP address is covered by this policy. Enter that required LAN IP address into the following blank box.
Range	Select ***Range*** if a range of IP address is covered by this policy. Enter the range of LAN IP addresses into the following blank boxes.

7. Select the time plan in **Take Effect** field as to
s execute the firewall policy.

Always	Select ***Always*** to execute the firewall policy every day.
Schedule	Select ***Schedule*** to set your desired time duration of executing the policy. Following is to select the desired days of a week in **Day** field and designate a specific time period in **Time** field.
Disable	Select ***Disable*** to suspend the firewall policy.



Setting up the Schedule

8. Click ***Add*** button to save the settings and transfer the entry into **Policies List**.

- To define a **LAN to WAN** policy:
  1. Select **LAN to WAN** from the drop-down menu of **Direction** field. Here, LAN to WAN is defined as **Outbound** data control policy.
  2. Execute the *step 2*, *3*, and *4* mentioned in "to define ***WAN to LAN policy***" paragraph.
  3. Select from the drop-down menu of **Source IP** field. This defines the packets from which PCs or servers are covered by this policy based on their source IP (LAN) addresses.

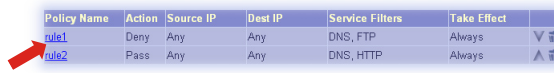
Any	Select ***Any*** if all LAN IP addresses should be covered by this policy.
Single	Select ***Single*** if only a specific IP address is covered by this policy. Enter that required LAN IP address into the following blank box.
Range	Select ***Range*** if a range of IP address is covered by this policy. Enter the range of LAN IP addresses into the following blank boxes.

  4. Select from the drop-down menu of **Destination IP** field. This defines the packets to which destinations are covered by this policy based on their destination IP (WAN) addresses.

Any	Select ***Any*** if all WAN IP addresses should be covered by this policy.
Single	Select ***Single*** if only a specific IP address is covered by this policy. Enter that required WAN IP address into the following blank box.
Range	Select ***Range*** if a range of IP address is covered by this policy. Enter the range of WAN IP addresses into the following blank boxes.

  5. Execute the *step 7* and *8* mentioned in "to define ***WAN to LAN policy***" paragraph.

- To modify a defined firewall policy:
  1. Click **Policy Name** field of that particular policy listed in Policies List screen; then, the current entry data is automatically shown on **Policies** screen.



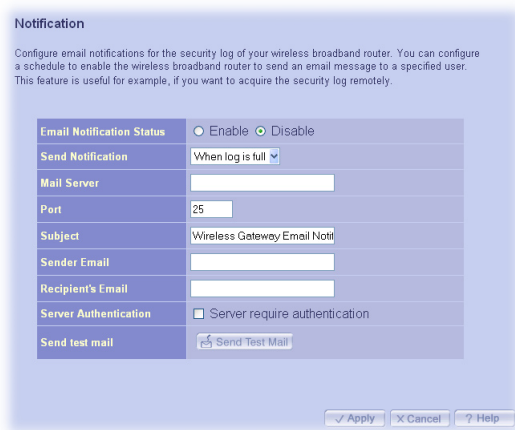
Policy Name	Action	Source IP	Dest IP	Service Filters	Take Effect
rule1	Deny	Any	Any	DNS, FTP	Always
rule2	Pass	Any	Any	DNS, HTTP	Always

  2. Change data into the necessary fields.
  3. Click ***Edit*** button to confirm your changes; then the corresponding data entry in **Policies List** will be updated accordingly.

- To delete a defined firewall policy:
  Click the right-side icon of the specified entry to remove it.

> Notification

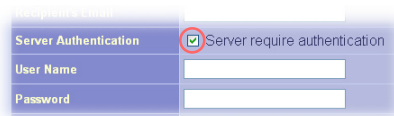
This feature allows you to send out logs by Email.


Notification
Configure email notifications for the security log of your wireless broadband router. You can configure a schedule to enable the wireless broadband router to send an email message to a specified user. This feature is useful for example, if you want to acquire the security log remotely.
Email Notification Status
Enable
Disable
Send Notification
When log is full
Mail Server
Port
25
Subject
Wireless Gateway Email Noti
Sender Email
Recipient's Email
Server Authentication
Server require authentication
Send test mail
Send Test Mail
Apply
Cancel
Help

  1. Click **Enable** in **Email Notification Status** field to turn on Log Email Notification.

2. Select the desired schedule from the drop-down menu in **Send Notification** field, defining sending Email notification by **Daily**, **Weekly**, **Monthly**, or **When the log is full**.
3. Enter the IP address of the SMTP Server in **Mail Server** field. It defines the server used for this E-mail notification.
4. Specify the port number in **Port** field, which allows for the outgoing Email. The default port is ***25***.
5. Enter the **Subject** description that will be shown in the subject field of every Email notification.
6. Enter **Sender Email** address that the recipients can reply to.
7. Enter **Recipient's Email** address that the email notification is sent to.
8. Choose if you want to enable server authentication.

Enable	Check **Server require authentication** feature if you want to implement authentication mechanism to keep from unauthorized access. You are required to log in to send a mail. Set your **User Name** and **Password** in the following fields.
Disable	Uncheck **Server require authentication** if you have no security concern.



Enabling Server Authentication

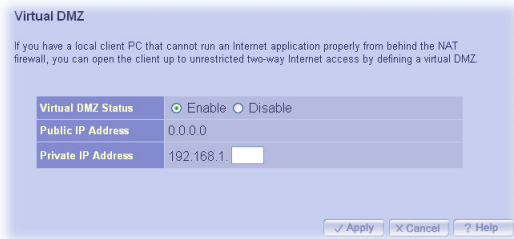
9. Click **Send Test Mail** button, trying out the setting and checking if it works in your way.

Click ***Apply*** to save the changes, or ***Cancel*** to cancel the changes.

> Virtual DMZ

This feature enables the PC/server on your LAN network to be exposed to all users on the Internet, allowing unrestricted 2-way communication between the PC/server and other Internet PC/servers. The PC/server in **DMZ** (De-militarized Zone) will receive all connections and requests without any restrictions.

1. Select **Enable** in **Virtual DMZ Status** field to enable this function.
2. The public IP you are using is automatically displayed in **Public IP Address** field.
3. Enter the **Private IP Address** of the PC/server you want to expose to Internet.


Virtual DMZ
If you have a local client PC that cannot run an Internet application properly from behind the NAT firewall, you can open the client up to unrestricted two-way Internet access by defining a virtual DMZ.
Virtual DMZ Status
Enable
Disable
Public IP Address
0.0.0.0
Private IP Address
192.168.1.
Apply
Cancel
Help

Click ***Apply*** to save the changes, or ***Cancel*** to cancel the changes.